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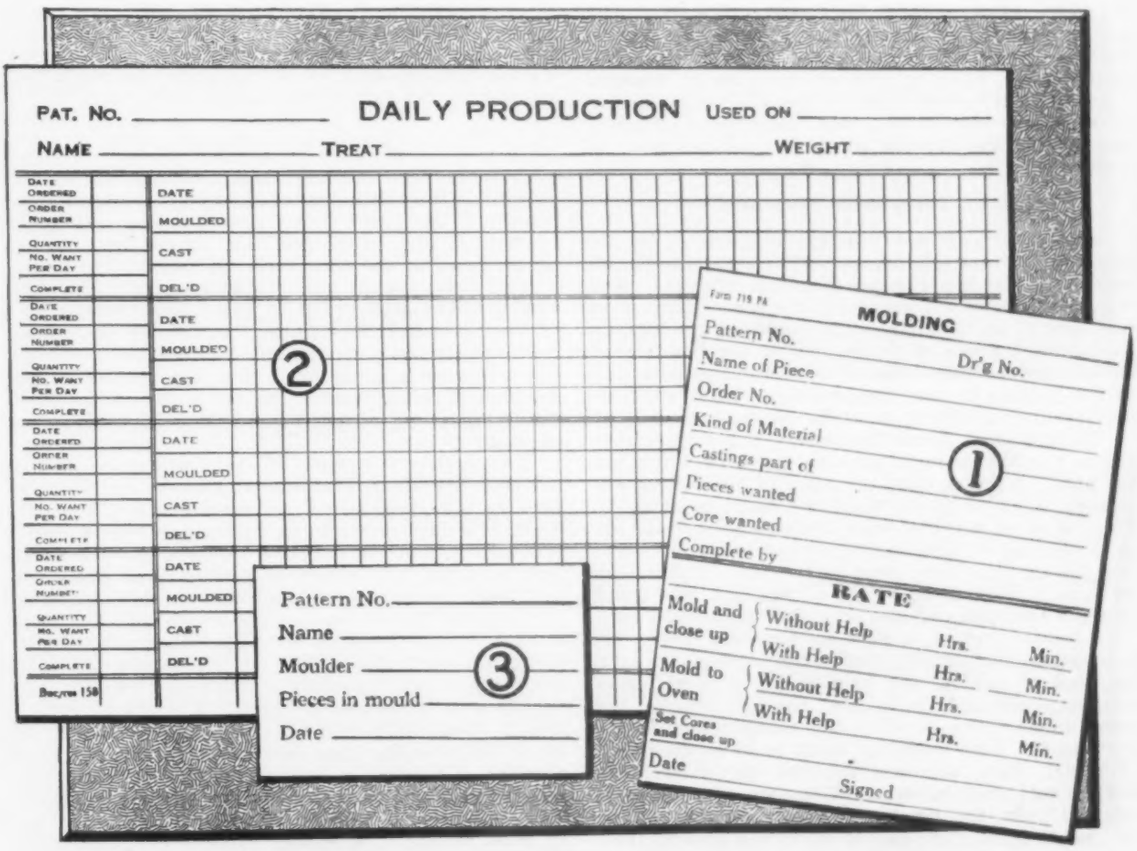
Systematizing Fou dry Production

Operations Planned for a Varied Line of Products and a Large Repair Business—Premium Wage Scheme a Corollary Development

BY GILBERT L. LACHER

A COMPANY which makes a varied line of products, no one of them in large quantity and some of them according to special specifications, is confronted with the problems of a jobbing shop rather than of a manufacturing plant. The economies to be gained from arranging equipment and routing production for repetitive work are largely beyond reach. Greater attention must be paid to the planning of operations to introduce a maximum of order and system in handling a wide range of miscellaneous work.



1—Molder's Copy of the Foundry Order, which Is Made Out in Quadruplicate. This is the molder's authority to undertake a given job. Under the heading "Rate" are entered the standard times for various operations. The molder is paid a premium of 50 to 60 per cent of the time he saves within these standards. 2—A production card is made out for every order. When a given job is completed, the card is placed in the "dead" file. Space has been provided for four jobs, so that the same card may be used repeatedly, under orders calling for the same pattern. The production card file now contains a complete record of all castings made during the past decade. 3—When a mold leaves the molder, a boy attaches to it a slip inscribed with the pattern number, name of casting, name of molder, number of pieces in the mold and the date. These slips, collected when a heat is poured, are an indication to the foundry superintendent's office that the castings have been made

Few organizations have made greater strides in that direction than the Bucyrus Co., South Milwaukee, Wis., among whose products are the railroad type and revolving shovels of all sizes; dragline and trench excavators; dipper, hydraulic and placer dredges; spreader plows and wrecking cranes.

Most of this equipment is used in connection with outside undertakings, often in remote locations, where delays are serious, inasmuch as they force the operating crews to remain idle until work can be resumed. It is exceedingly important, therefore, that repair parts may be obtained promptly when needed. Hence it is not surprising that the Bucyrus Co. places great emphasis on the expeditious handling of its repair business. A definite date of delivery is promised on every repair order, and the organization takes pride in doing this work according to schedule.

Between 30,000 and 40,000 patterns are kept in storage to supply repairs on machines in service, as the company aims to furnish replacement parts on its equipment as long as it is in use. Recently a repair order was received for a machine which was built in 1887, only seven years after the Bucyrus company was formed. Orders for repairs vary widely in size, some of them being very small, involving as little as $5 each, while others at the opposite extreme total thousands of dollars. The prompt handling of repairs in conjunction with the production of so varied a line of manufactured products calls for a high standard of ability in planning operations. In this article attention will be confined to the production system employed in the foundry.

All orders to the plant are issued by a production department. On authority of production orders, a finished stock department writes the foundry orders. These are in quadruplicate—one copy each for the finished stock department, the foundry office, the molder and the core maker (Fig. 1). These orders are marked with the name of the piece, the order number, pattern number, drawing number, the kind of material from which it is to be cast, the name of the equipment of which the casting is a part, the number of pieces wanted and the date on which the castings must be completed.

Pattern Department Responsibility

Pattern or core box numbers are entered on the slips by the pattern department, which thereby indicates that it has checked the order and has taken the responsibility for supplying the proper pattern or core box to the foundry. The copies of the slip intended for the molder or core maker are then pinned on patterns or core boxes, which are thereupon sent to the molding or core departments. These slips are the foundry's authority to make the castings ordered.

When a mold leaves the molder, a boy attaches a slip to it which is inscribed with the pattern number, the name of the casting, the name of the molder, the number of pieces in the mold and the date (Fig. 3). These slips are collected when a heat is poured and are an indication to the foundry superintendent's office that the castings have been made. An entry is then made on a heat sheet, where all castings in a given heat are recorded, and also on a daily production card.

A production card is made out for every order. On it is entered the pattern number, the name of the part, the kind of casting, the weight, the piece of equipment on which it is to be used, the date ordered, the order number, the quantity, the number wanted per day and the time when the order is to be completed (Fig. 2). Here also are recorded the dates when molded, cast and delivered. The date of molding is obtained from the timekeeper's card, which will be referred to later. The date of delivery is secured from a shipping receipt which is made out in the shipping department when castings are received from the cleaning department, weighed and loaded into cars for delivery to the machine shops.

When a given job has been completed, the production card is placed in the "dead" file. Space has been provided on each production form for four jobs, so that the same card may be used repeatedly when an order calling for the same pattern is received. The production card file is one of the most useful records in the possession of the plant, indicating all the castings made throughout the last ten years and the time required in their production.

Cost keeping is tied up with a premium plan of paying wages. Wherever possible work is rated by the hour or minute. The premium department by a time study decides what is a normal period for the performance of a given task, and then adds an inducement factor varying from 50 to 60 per cent. As an example, let it be assumed that the normal time limit on a certain molding operation is 6 hr. and the molder does the work in 4 hr. He is credited with a premium of 1 hr., or one-half the time he saves.

Whenever a new job is handled in the foundry, the premium department must make out a new rate card. The "molding master card," for instance, which identifies the job, indicates the time limit, whether or not a helper is required, whether metal or wooden flask is to be used, its dimensions, and whether the job employs cope and drag, or cope, cheek and drag (Fig. 4). Under usual quantity is indicated the usual number of orders for a given job received at one time. Ordinarily at least two identical orders are placed at a time. Under a column headed "R. S." are inscribed the initials of the rate-setter, and under "O. K." those of the head of the premium department, indicating his approval of the card as prepared.

On the reverse side of the molding master card is a "coremaking master card," on which the rates for making cores for the same casting are entered. Thereon is indicated necessary information regarding the employment of driers, arbors, nailing, hooks, rods and vents, the core box number, the number of cores in the set required for the mold, and the time limit per unit in making cores from core boxes.

A group time limit is fixed for the larger cores where parts of the work are performed by different men. The time on the floor, on the bench, and for pasting and washing go up to make the total time allowed for the unit.

Wages and Premiums

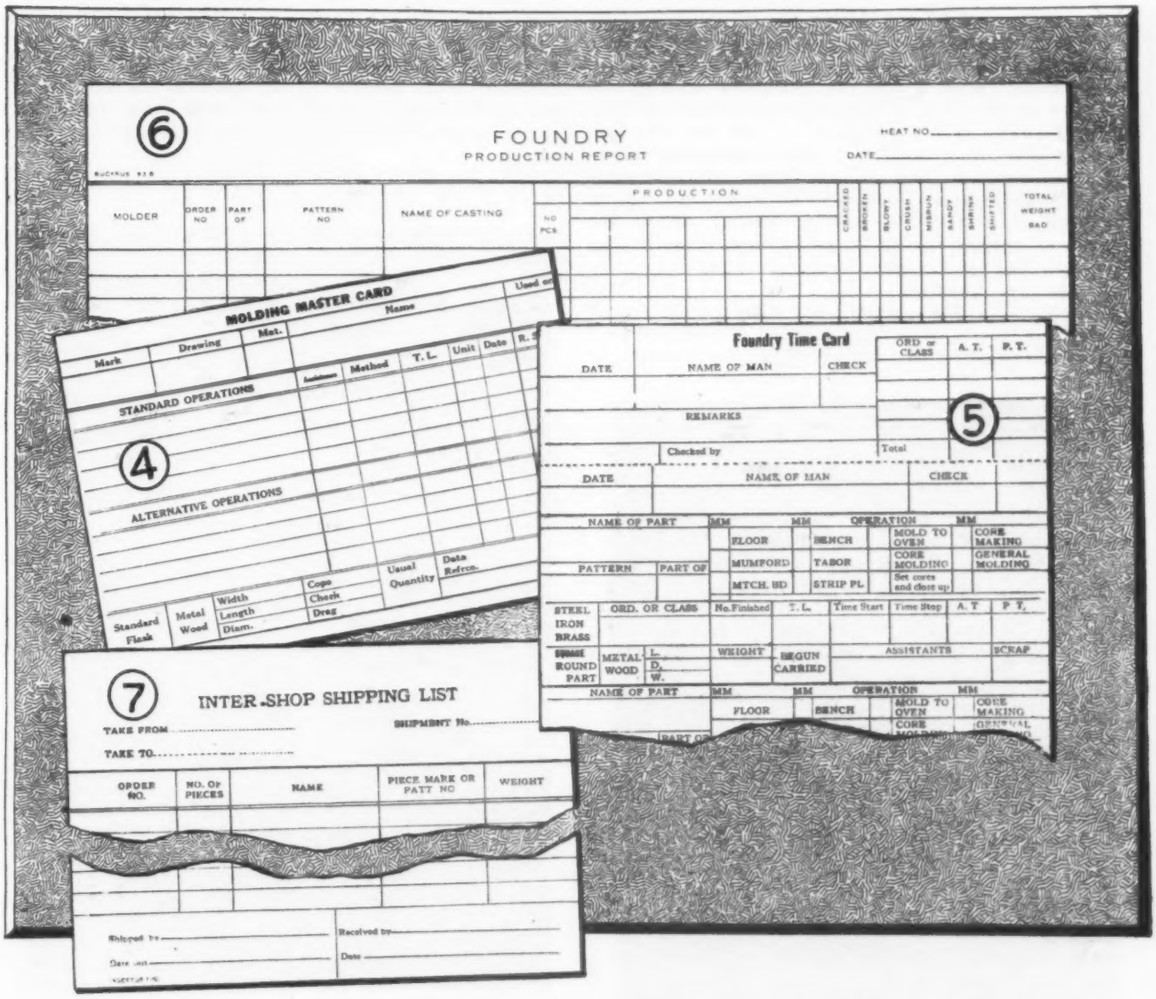
The time limits, or base rates, fixed on these master cards are the timekeeper's authority to compute the wages of the men. The timekeeper keeps time on every job made and the premiums earned are awarded on the basis of the time card. A foundry time card is provided for each man in the foundry. The time card for the molders (Fig. 5) has a detachable section at the top called the "header," containing the actual time and the premium time put in on various jobs by the molder on a given date. This section goes to the paymaster's department. The remainder of the card has five identical sections for recording the progress on as many jobs.

To simplify the work of the timekeeper, all the principal operations are listed so that he can describe them by merely making a check mark with his pencil. Thus, if it is floor work, all he has to do is to check the word "floor." If a given job is under way, but not completed, the record is carried over until the next day. If helpers are used, it is so indicated, and the helper's rate is computed on the basis of a percentage of the molder's earnings. Incidentally, for the guidance of the molder, his slip carries the rate for a given job, indicating whether it is to be performed with or without a helper. A day-work allowance is provided for any work which is not rated. A space for recording time put in on unrated work is provided at the bottom of the foundry time card. In calculating premiums, the total time allowed for given tasks is compared with the total actual time put in. In other words, if a molder exceeds the time limit on one job, that excess time is added into the total actual time put in on all of the jobs which he completes.

Group rates have been established for shaking out, chipping and poking out. In other words, the gang employed on a certain operation is credited with one-half the time it saves. No premium rates have been fixed for furnace men, but their performance is completely recorded in the electric and open-hearth furnace and cupola journals. They are granted bonuses, how-

ever, on the basis of exceeding a certain tonnage in production and a certain percentage in good castings obtained from the metal. Welding, annealing, loading, operation of cranes and truck tractors, handling of flasks in the yard and similar operations are on a straight day-work basis.

The daily heat sheet previously referred to (Fig. 6) contains a complete record of all castings poured from each heat, the pattern numbers, the order numbers, and the names of the molders who made the molds, as board on which is kept a daily record of total hours of labor, total production and total shipments, as well as the balance of work in the chipping room. There is always a portion of the plant output in the chipping room, the average tonnage in that department amounting to from four to five days' production. These statistics are drawn up in graph form, also, so that the performance of the foundry department may be grasped at a glance. The superintendent, his assistants and the foremen watch the bulletin board closely,



4—Whenever a New Job Is Handled in the Foundry, a New Rate Card Must Be Prepared. The "molding master card" identifies the job, indicates the time limit, whether or not a helper is required, whether metal or wooden flask is to be used and its dimensions, and whether cope and drag only, or cope, cheek and drag, will be used. 5—Time card as provided for each employee. A detachable section at the top goes to the paymaster's department. The remainder of the card has five identical sections for recording the progress on as many jobs. To simplify the work of the timekeeper, all the principal operations are listed so that he can describe them by merely making a check mark with his pencil. A space for recording time put in on unrated work is provided at the bottom of the card. 6—Daily heat sheet, containing a complete record of all castings poured from each heat, the pattern numbers, order numbers, names of the molders who made the molds, number of bad castings and an indication of how each was faulty—whether cracked, broken, blowy. Total weights of good and bad castings are sent each month to the cost department. 7—Shipment receipt is made out whenever castings are sent from the foundry to other departments. The total weights as obtained from the shipment receipts are computed monthly and forwarded to the cost department

well as a record of bad castings, indicating in what respect they were faulty—cracked, broken, blowy, etc. The total weights of good and bad castings are sent each month to the cost department. Likewise the total weights as obtained from the shipment receipts are computed monthly and forwarded to the cost department.

Check-up by Superintendent and Foremen

In the foundry superintendent's office is a bulletin so that remedial action may be taken promptly if occasion demands.

Once a month a cost meeting is held in the foundry department, which is attended by the superintendent, the general foundry foreman, the metallurgist, two office assistants, an apprentice instructor, two bay foremen, a general foreman and two sub-foremen of the chipping room, a core room foreman, a general night foreman and the general foreman of the gray iron department.

Inwall Cooling for Blast Furnace

System of Water-Cooled Plates for Retaining Shape of Wall and Prolonging Its Life—Application to Dutch Furnace

BRONZE cooling plates, connected with a water supply system and drains, constitute essentially the Dovel inwall cooling system for blast furnaces. This has been devised by James P. Dovel, vice-president Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., and has been given a test of more than two years in some of the furnaces of his company. In addition, the system has been fitted to several other furnaces of different companies, including the new furnace of the Koninklijke Nederlandsche Hoogovens en Staalfabrieken, at Ymuiden, Holland. The section drawing shows the system as applied to the Dutch furnace, after having been specified by the consulting engineers, Freyn Engineering Co., Chicago.

In designing the system, the cooling plates are so located and spaced as to form a series of shelves which will effectually stop the movement of stock along the shell of the furnace. This results in an agglomeration of material, forming a good inwall, with just enough water circulation to prevent fusion to a point a few inches in front of the nose of the plate. This maintains a vertical alinement of the inwall, which heretofore has been doubtful, as the tendency has been frequently for the incandescent stock to cut the inwall away on one side.

Taken at an Elevation of About 10 Feet Above the Mantel, This Shows One Side of the Inwall Completely Cut Away. This inwall was replaced by the water-cooled plates, during 18 months, in the absence of any brick whatever. After the photograph was taken the furnace was put back in blast and has run about 7 months, seeming, from its performance, to be in perfect condition

One main difference between this system and other methods in use lies in the fact that these plates are carried by the shell and do not depend for support upon the brick wall. As a matter of fact, they can function in the absence of any brick at all, which was not the case with other methods, where any failure of the wall meant a complete failure of the cooling plates also.

Due to their method of installation and support, these plates are easily replaced in case of individual failure. This method of maintaining the furnace section and avoiding the great trouble and expense due to cutting away upper walls is reported to have given thorough satisfaction in the twelve furnaces to which it has been applied in this country.

Another View in the Same Furnace, Taken Directly Above the Other One, and Showing Protruding Ends of Water-Cooled Plates After an 18-Month Run. No repairs were made prior to putting blast on again

Our photographs are from the inside of a furnace which was failing rapidly prior to the installation of these cooling plates. After the plates were installed, which required about 12 hr. working time, the furnace was operated for about 18 months. It was then blown out because of market conditions. At that time the photographs were taken. Since then the furnace has been put in blast without any repairs to the inwall and has been operating so successfully as to break former records. This later campaign, so far has listed more than seven months.

It is believed by Mr. Dovel that, inasmuch as five of the furnaces fitted with this device have been breaking previous records, the system may possess other

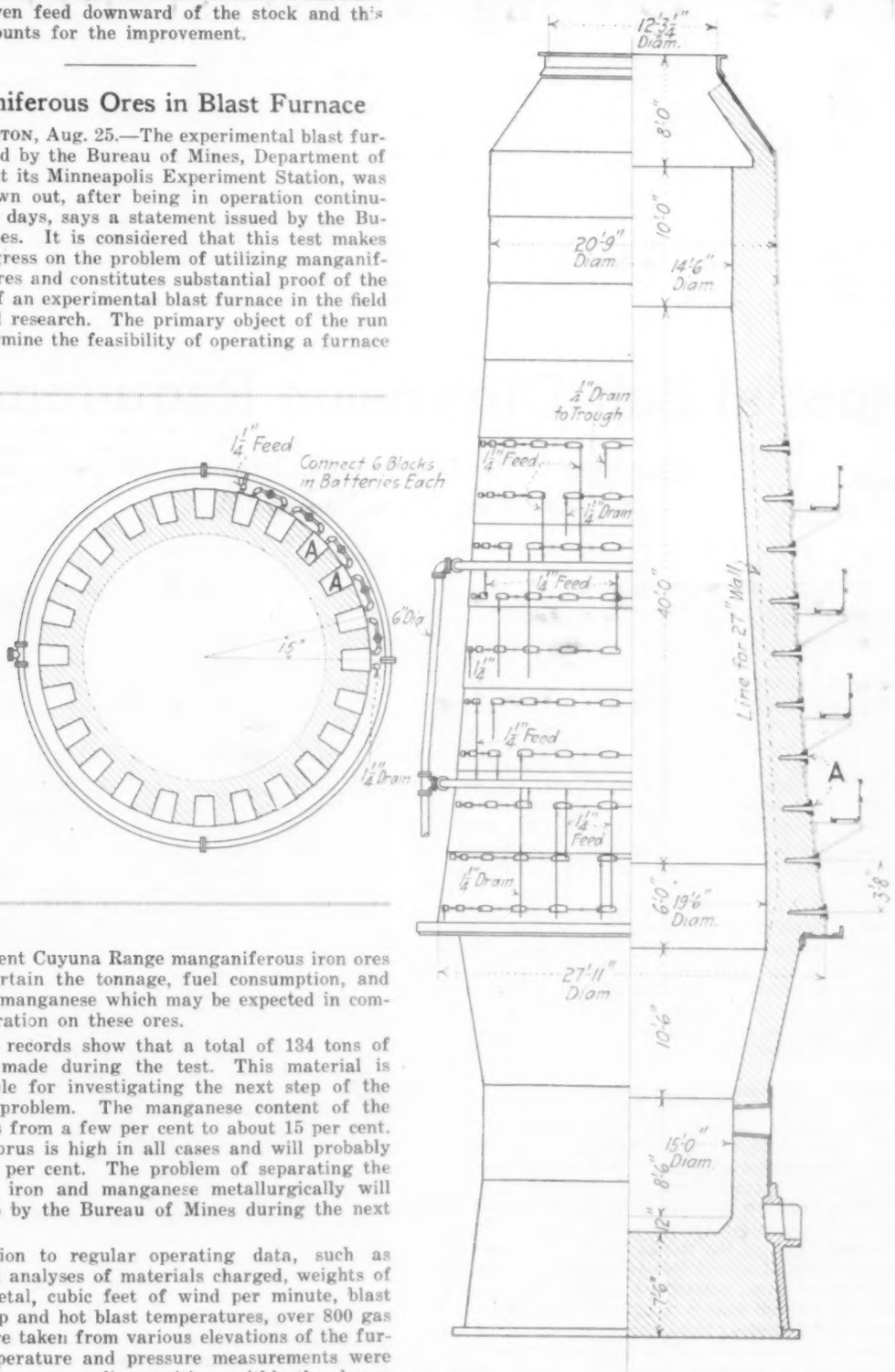
advantages than merely protecting the inwall. The perfect alinement of the walls should make a smoother and more even feed downward of the stock and this perhaps accounts for the improvement.

Manganiferous Ores in Blast Furnace

WASHINGTON, Aug. 25.—The experimental blast furnace operated by the Bureau of Mines, Department of Commerce, at its Minneapolis Experiment Station, was recently blown out, after being in operation continuously for 34 days, says a statement issued by the Bureau of Mines. It is considered that this test makes distinct progress on the problem of utilizing manganiferous iron ores and constitutes substantial proof of the usefulness of an experimental blast furnace in the field of industrial research. The primary object of the run was to determine the feasibility of operating a furnace on 100 per cent Cuyuna Range manganiferous iron ores and to ascertain the tonnage, fuel consumption, and recovery of manganese which may be expected in commerical operation on these ores.

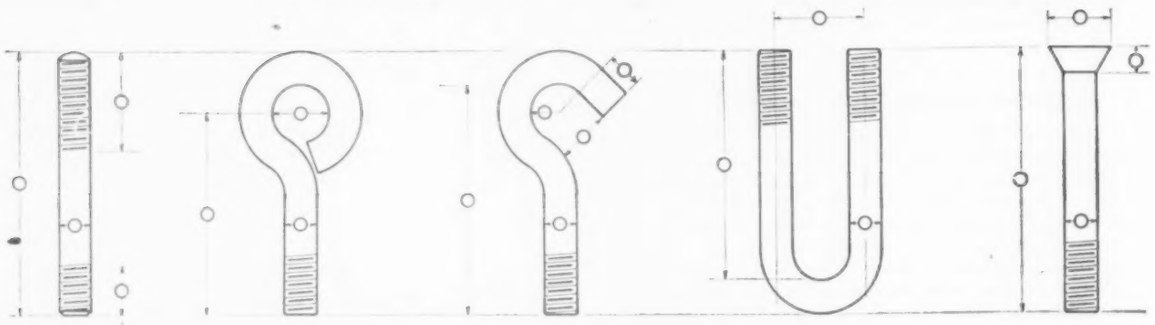
Tonnage records show that a total of 134 tons of metal was made during the test. This material is now available for investigating the next step of the manganese problem. The manganese content of the metal varies from a few per cent to about 15 per cent. The phosphorus is high in all cases and will probably average 0.6 per cent. The problem of separating the phosphorus, iron and manganese metallurgically will be taken up by the Bureau of Mines during the next fiscal year.

In addition to regular operating data, such as weights and analyses of materials charged, weights of slag and metal, cubic feet of wind per minute, blast pressure, top and hot blast temperatures, over 800 gas samples were taken from various elevations of the furnace. Temperature and pressure measurements were also made at corresponding positions within the charge column. These data constitute fundamental information on blast furnace operation. As a result more systematic and comprehensive data have been obtained than was possible in previous experiments. With the data now available, it will be possible to follow the reactions taking place in the interior of the furnace. Similar data have been taken on a commercial furnace so that comparisons can be made between experimental and commercial furnace conditions. The gas analyses on the small furnace and those available from a commercial furnace indicate some interesting conclusions can be drawn concerning the path of materials in the experimental furnace, as well as in commerical furnaces.



Transverse and Partial Longitudinal Sections, with Half Elevation, of Blast Furnace Erected at Ymuiden, Holland. The cooling plates (as at A) are 3 ft. 8 in. apart vertically and 15 deg. apart radially, making 24 in each "layer" and 240 in all. They are fed by 1¼-in. water lines, drawing from a 6-in. supply line, and have drains of the same 1¼-in. pipe. The plates are interconnected in groups of six. Most of the cooling plates extend 2 ft. into the furnace wall, but the two lower rows are longer

Five Types of Bolts, Showing Dimensions Necessary in Ordering



Special Bolt Dimension Requirements

Suggestions to Purchasers to Be Specific if Delays or Errors Are to Be Avoided

BY ARTHUR L. GREENE*

THERE is no doubt that the bolt and nut manufacturer who lacks complete specification data in turning out special work is handicapped in serving the customer. It might be supposed that the classification line between special and standard bolts is so well known that every layman would be familiar with it. But a little investigation will disclose a surprising lack of real understanding of just what constitutes the difference between them. Apparently, many large users of bolts and nuts use the terms "standardized" and "special" interchangeably; in consequence, added expense and delay in delivery are experienced while the manufacturer writes the customer for missing dimensions.

Examples of the above are easily demonstrated. Shown herewith, for instance, and reading from left to right, are a (1) stud bolt, (2) eye-bolt, (3) hook bolt, (4) U-bolt, and (5) a countersunk bolt. All of these come under the heading of "specials"—meaning that there is no accepted standard for measurement of any other one dimension, with only the diameter and bolt length given.

Customer and Manufacturer Differ in Ideas of Length

The Buffalo Bolt Co., North Tonawanda, N. Y., calls attention to a common fallacy in ordering stud bolts. The customer in many instances assumes that, in giving the overall length and diameter of a bolt of this kind, sufficient data are given for fulfillment of the order. But consider the following facts: First, absolute correctness of the thread length for both the tap and nut ends of a stud bolt is essential for its use in a particular case; second, no standardized length of these tap and nut ends is recognized for a given overall length and diameter; third, measurement of the length of the tap and nut ends differs from each other—that is, the tap end is measured *through* the point, while the nut end is measured *to* the point; fourth, point measurement also varies in many instances and must be known, therefore, for correct interpretation of the customer's wishes.

In consequence of the failure of many customers to give either sufficient information when ordering a stud bolt, or because of failure to give the right kind of information, many bolt and nut manufacturers have developed their own methods of interpreting specifications. Some have even adopted a standard of their own in which a given overall length and diameter of the bolt represent a definite length of the tap and nut ends. Difficulties attend the use of this, however, as it is not a standard commonly employed or commonly recognized as such.

In the illustration the dimension items have been drawn in which need to be known for proper filling of the order. It will be noted that, in addition to giving the overall length and diameter of the stud bolt, there is also shown the length of threads for both the nut and tap ends and the point measurement. Knowledge of each of these specifications is necessary.

Turning now to the ordinary eye-bolt, another instance is had wherein many of the same difficulties are experienced as those with a stud bolt. Many customers will order a quantity of eye-bolts—say, 1000, ½ in. x 4 in.—and assume that the information given is sufficient for proper interpretation of the order. In this instance, the question arises in the manufacturer's mind as to the definition of the latter dimension—namely, 4 in.

Generally speaking, it means, of course, the length of the bolt. But does this represent the overall length of the bolt including the eye, the length of the bolt measured from the center of the eye to the end, or the length of the bolt measured from under the eye to the end? We have here three possible interpretations, any one of which may be correct. Another question arises as well. What inside diameter of the eye is wanted by the customer? This dimension is important when the use of an eye-bolt is considered. In other words, if the diameter of the eye is made too small or too large, the use of the bolt in a particular instance may be destroyed.

What It Is Necessary to Specify

In our illustration, therefore, the outline drawing of the eye-bolt has the necessary line dimensions inserted. These consist of the eye diameter measurement and the measurement on which the length of the bolt is based—that is, either the overall length, length from the center of the eye to the end, or the length measured from under the eye to the end. With any one of these three latter dimensions known, together with the inside eye diameter, there arises no possibility for misinterpretation of the order. It is worth noting here that many bolt manufacturers have taken upon themselves to consider the length measurement to mean (unless specifically stated otherwise) the length of the bolt measured from the center of the eye to the end. But this practice is by no means universally followed.

To consider briefly now the case of a hook bolt, such as that shown third from the left: A customer will order a number of these bolts, with the same lack of spe-

*Buffalo Bolt Co., North Tonawanda, N. Y.

cific data as that noted with the eye-bolt. Here again the bolt manufacturer encounters much the same difficulties, only perhaps to a greater extent. The length of bolt given is open again to three different interpretations—that is, does the customer mean the overall length, length measured from under the hook to the end, or length measured from center of the hook to the end? The obvious interpretation would be to consider the measurement to mean from under the hook to the end. There is no certainty, however, that such an interpretation would be correct from the customer's standpoint.

We encounter still further difficulties in considering the measurements of the hook itself. There is nothing in the order specifications to indicate the diameter or radius of the hook, the width across the opening, or the length of hook wanted. There is no general rule by which the manufacturer can interpret these measurements. At the same time, it is vitally essential that these dimensions be known. If they are not given, the manufacturer has no other recourse but to write the customer for the missing data.

In the illustration, therefore, on the outline drawing of the hook bolt are entered the dimension lines for the following items: length of bolt measured from under the hook to the end of the bolt, diameter of bolt, width across the opening of the hook, length of the hook itself and the radius of the hook. With these items shown or given, sufficient data are at hand for the manufacture of the bolt exactly according to the customer's wishes.

Customer May Give Only Two Dimensions

Next to the hook bolt is the U-bolt. We can presume again, as often happens, that the customer gives the manufacturer but two dimensions—that is, the length and diameter of the bolt. It will be seen that certain essential dimensions are missing from this order. Regarding the length, the manufacturer again encounters the problem of determining whether the customer means the overall length or the length measured from under the curve to the end. It will be noted further that there is no dimension center given for the "U" shape, nor is the width between the two legs indicated. These dimensions must be known before manufacture of the product can begin.

In the diagram, the U-bolt is shown with the dimension lines that must be included for proper interpretation of the order. The dimension indicating the width of the bolt is drawn between the center lines of the two legs; this is the recognized method of specifying the bolt width, although, if the customer desires, this dimension can measure either from inside the legs or across the legs. The length of the bolt here is measured from inside the bend to the end of the bolt.

Countersunk Head Bolts

To consider now the last item shown—the countersunk head bolt. Some of these bolts are standard, while others are special. Practically all tire, plow and sleigh shoe bolts are considered standard; all other types, however, are special and require, therefore, complete specification data. Most important here is the specification for the angle of the head. Its importance rests on the fact that, where a bolt of this kind is to be sunk into a metal sheet of plate, the angle of the head must conform to the angle of the counterbored hole. Otherwise, an imperfect bearing surface will result. Consider a typical instance where the customer sends in an order for a special countersunk head bolt, wherein he requests a 15-deg. countersunk head with a given length and diameter of bolt.

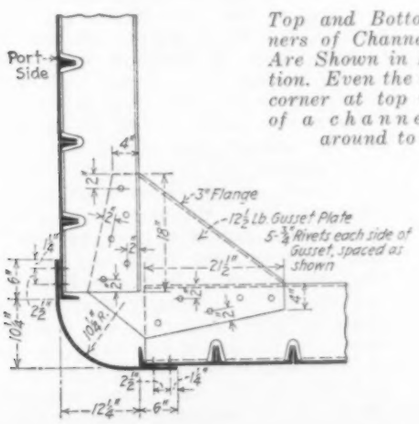
Several difficulties are now encountered. First of all, the customer has failed to give either the width across the head or the thickness. The specification "a 15-deg. angle" is open to various interpretations. The customer may mean a 15-deg. angle measured from the center line of the bolt or he may mean an inclusive angle measured over the entire head.

When a countersunk head bolt is ordered, the customer must bear the following specifications in mind as indicated in the diagram. In addition to giving the diameter of the bolt and its length (which will be taken here to include the depth of the head), the customer must specify either the thickness of the head or its width. It should be clearly indicated, further, whether the angle of inclination of the head is measured from the center line to one side of the head, or whether it is an inclusive angle for the entire head. If the foregoing items are specified, the bolt sent will conform with what the customer has in mind.

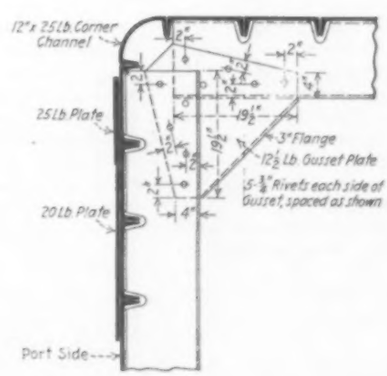
Barge Made Almost Wholly of Steel Channels

STEEL channels form not only the frame work but also the great bulk of the sheathing or plating of ten 100-ft. steel barges recently built for the New York Central Lines. Channels 12 in. x 20.7 lb. are used as standard, being run lengthwise over the deck, the bottom and both sides. The sloping ends of the barges are made of similar channels run athwartships.

Even the rounded corners in the cross section of the hull are made of channels at the upper part, although plates are used in the lower corners. Additional plates for rubbing strips are carried along near the upper part of the section, but do not form a portion of the regular hull plating.



Top and Bottom Corners of Channel-Barge Are Shown in Illustration. Even the rounded corner at top is made of a channel—bent around to fit



This method of construction has been patented by R. E. Ellis, who is represented by Edgar Ames, 30 Church Street, New York. One claim for the system is great rigidity. Low maintenance cost and unusual dead weight carrying capacity are claimed also.

Wage Incentives That Fit the Job

Method of Compensation Should Be Selected with Due Regard to Type of Work, Intelligence of Employee and Simplicity of Record-Keeping

THERE is no end to the literature on methods of paying factory workers, and out of it emerges no clear point of view. This much is apparent, no one method of compensation fits all requirements and conditions. Of recent developments one of the most helpful is that of considering workers in groups rather than as individuals. The method of compensation based on the group makes for better cooperation and for simplicity in wage computation.

The Group Plan

One of the most successful practitioners of the group method of wage payment is the Packard Motor Car Co., and its procedure is succintly set forth by J. H. Marks, industrial engineer of that company, in the following paragraphs:

1—We use a group bonus plan throughout all of our productive departments. We do not believe that we lose the advantage of individual initiative for the reason that the members of each group who have ideas or knowledge of methods that will increase the output of the group have every incentive to use their ideas themselves as well as to transmit them to their fellows.

2—The computation for purposes of determining wages and for cost are very much simpler by our method. It is only necessary for us to keep track of the output of each group rather than the output of each individual. We count only finished parts so that it is not necessary to keep track of operations, which would be the case if we had an individual incentive plan.

3—We do not lose quality of production for the reason that our inspection department is entirely independent of the wage payment plan and is particularly charged with the responsibility of maintaining quality, understanding that there is always a tendency to slight the work when the workmen are engaged in an incentive plan.

4—The standards for each operation are established through standard times which are set as the result of time study. It is possible for us to get operation costs but we are interested primarily in the cost of a completed product.

Deviations from the standard are reported by means of time tickets, and these, by the way, are the only time tickets used in productive departments which give all the necessary information for obtaining the cost of methods other than standard.

Our method involves the setting of standard times on each operation on each part entering into the product, summarizing these time standards according to the operations performed by each group. The time value of the completed product as reported by the inspection department which is independent of the incentive plan is computed daily and summarized by each bi-monthly pay period so that by comparing the standard time value of the work turned out each day and each pay period with the elapsed time required by the workmen in the group to turn out this work, we obtain a ratio between the work turned out and the time required to turn it out.

Our proposition to the workmen is that we agree to pay 1 per cent bonus on top of regular wages for each per cent that the above described ratio exceeds a predetermined point for an entire pay period. The standard of ratio or efficiency varies from 70 per cent to 80 per cent, depending upon the kind of work done in each group. As the average efficiency of our plant is approximately 90 per cent, the bonus earned varies from 10 per cent to 20 per cent.

We obtain our cost control through the fact that after standard efficiency is reached the cost is practically constant so that we know that if a standard of efficiency in excess of the starting point is maintained the costs are at or below standard.

The Hudson Motor Car Co. likewise pays its men by the group system. R. S. Perry, its planning manager, states briefly:

1—Our men are assured of a certain day's pay calculated on an hourly rate and in addition a bonus made up from a calculation of the number of pieces produced.

2—This system is very easy to compute because all payment of the piece work portion of the plan is made from the number of large units produced. For example, the men in our axle plant are paid their regular daily rate plus a certain bonus, depending upon the number of completed axles produced. No attempt is made to count individual pieces from any particular operation.

3—Our payment standards are based upon time studies of operation. The unit cost is therefore predetermined. Deviations from these standards are reported when gangs fail, on a production basis, to earn their guaranteed day rates.

The Westinghouse Electric Plan

A most interesting presentation of the group method of wage payment has been made for the Policyholders' Service Bureau by G. D. Piper, assistant general auditor of the Westinghouse Electric & Mfg. Co. The information supplied by Mr. Piper admirably incorporates in relatively short space almost all the essential features of this form of wage payment.

1—We use groups of moderate size, not over 12 workers in a group, which we have found, from experience, increases rather than lessens individual initiative. This result we believe to be largely due to the speedier workers being willing to put forth their best efforts in a group, where their individual performances are more or less submerged in the performance of the whole group, whereas working as individuals the tendency is to limit their rate of production so as not to invite the ill will of their less ambitious fellow-workmen. Furthermore, much of our group work consists of several grades—i.e., work requiring low, medium and high rated men—and we believe our group system tends to stimulate more interest on the part of the lower rated men toward qualifying for the more highly paid grade of work performed in the group than when working by themselves.

2—Our system is inherently easy of computation due to the fact that the worker knows that if he completes a job without exceeding the standard time limit he is paid for limit time at his standard time rate. For example, if the standard time for the job is, say, 10 hours and the worker completes it in

exactly 10 hours, or less, he knows his earnings on that job are ten times his standard time rate an hour. Conversely, if he expends more than 10 hours on such job, he knows his earnings are the number of hours taken times his "day work" rate.

3—Quality is essential to eligibility for the higher earnings offered under the standard time wage system. Adequate inspection is our insurance for receipt of quality.

4—Our standard time wage system renders feasible to a considerable extent discontinuance of detailed product or job costs, because the cost of work done thereunder—on which time expended does not exceed the standard time limit—is practically a piece work cost. Deviations from the standard time limit are taken care of by a so-called "fall down" report which is referred to the supervisory force, promptly after this knowledge reaches the cost department, for explanations as to the causes for the "fall downs." There may be, of course, deviations from the standard time hourly rates in that high-rated workmen are assigned to low-rated jobs, and when this occurs the unit cost is increased; in these cases the extra cost is reflected in our periodical average costs if on standard product, or in the cost of the individual order if on special product.

The Worthington Pump & Machinery Corporation is using a group premium successfully on casting, cleaning and shipping in several of its factories.

The Burroughs Adding Machine Co., while not using the group plan on a large scale, does employ it in two small, compact units, those engaged in making shipping boxes and roll paper.

The Cleveland Metal Products Co. gives a bonus based on group production.

A large manufacturer of motor wheels uses group rates for practically all of its dry kiln, stock handling and pickling operations. In these cases the entire group works as one man as far as the cost keeping is concerned, as a piece rate is set for the number of units handled. This rate times the production, divided by the number of men in the group, gives the individual earnings:

THE best laid plans for stimulating production by wage incentives "gang aft a'gley" because of too complicated computations. No matter how ingenious the scheme, if workers fail to understand it and the management spends too much effort trying to keep the records straight, it will not prove practical. The group method of wage incentives, by treating the extra payment in regard to a group rather than an individual, greatly simplifies the computation and makes for better cooperation. This study of group wage methods was made by the Policyholders Service Bureau of the Metropolitan Life Insurance Co., New York.

Individual Incentive Plans

It is, however, manifestly unfair to present information on the group method of wage payment without similarly citing successful application of the individual incentive plans.

The Burroughs Adding Machine Co. uses the piece work basis for the greater part of its production. Its methods of wage payment are described in detail by V. R. Bechtel, its factory accountant, as follows:

1—The greater part of our production is paid on a piece work basis, the basis of which is a specified number of units an hour to be completed on a particular operation to earn the class or hourly rate assigned to each class of work. Increase or decrease above or below this task is paid for or deducted from the class rate in proportion to the production.

2—The time ticket shows the task in pieces an hour, the class rate, and the number of pieces finished. The calculation of earnings is made by reference to a chart to secure the cost for 100 pieces; then multiplying by the number of units completed, using calculators.

3—Quality is maintained by thorough inspection. In bench departments employees must re-do rejected work without pay. In machining departments the amount paid to the employee for his labor is deducted from his pay. In cases of scrapped work or rejected work that must be repaired by a different department than the one originally doing the work, deduction from the employee's pay is made for an amount not less than the amount paid to the employee for doing the operation, and not more than the labor and material value to point of rejection.

4—Standards are established for each operation as far as direct labor is concerned. Overhead is distributed on a percentage of direct labor. This standardizes both the labor and overhead. Deviations from standard are reported daily, showing the excess of doing any job on which there is a piece work task, either on a temporary piece work task higher than the standard task, or on a day work basis.

An Individual Premium Plan

A foundry equipment company, while not using a group bonus plan, employs an individual premium plan. It admits that its method of computing the factory workers' payroll is somewhat complex and difficult, inasmuch as the premium system enters into the computation of an employee's wages. The premium system is based on standard time production for each operation, hence the time on each operation must be figured individually. It feels that its method of paying factory workers both speeds up production and maintains a high standard of quality.

The allowed time on each operation is the standard for the operation, and any deviation from this standard is automatically recorded under the premium plan. If an employee finishes a job in the allowed time, which is the rule, he is given this difference of time, as a premium, which is automatically recorded on the company's payroll sheets.

All work in this company's factory is done on shop orders, either productive or non-productive, according to the classification of work. When an employee commences to work on a shop order, he is given a time card with the order on which he is to work recorded thereon.

When the man commences and when he leaves this job, the time card is punched on the time clock. These job cards pass through to the shop dispatcher, who records the time elapsed on each job. On the subsequent morning the total cards for each employee are forwarded to the timekeeping department, where they are recorded in the payroll book, under productive or non-productive headings. The non-productive cards are simply recorded on the payroll book, showing the order number and time elapsed on each job. At the end of the week, the total hours on the pay sheet are added up and brought down into their respective columns and extended by the rates, and this amount is placed in the total rate column for the week. Then the employee's check is drawn.

Employees working on premium work use a special card. This premium card records the set-up and take-down time allowed on each job, the number of pieces on the job and the allowed time for each piece. When the cards reach the payroll department, the elapsed time is recorded in one column with the set-up and take-down time, and the total time on the job, being the number of pieces plus time allowed on each piece as recorded in a separate column. The difference between the allowed time and the elapsed time is the premium or excess time on the job. At the end of the week these columns are footed up and extended as in the case of non-productive work.

Active Metallurgical Research

Problems Handled at the Bureau of Standards Show Great Diversity—A Plea for Larger Personnel

BY DR. H. W. GILLETT*

FUNDS, staff and equipment available for metallurgical work, and the type of metallurgical problems studied at the Bureau of Standards of the Department of Commerce, were covered in the first article, which discussed some of the activities other than research. This one will describe some of the more important current research work.

Since a mere list of projects may give an erroneous idea of their relative importance, the approximate percentage of the metallurgical division funds spent on them in the fiscal year just closed is given, from cost-distribution figures. One per cent of the funds is approximately $1,000. This is equivalent to around 825 average man-hours, supervisory, technical, shop and clerical, plus the necessary supplies and equipment. The labor and materials items will, of course, not have the same ratio on all projects.

General projects, other than research, covering information, testing, service to other parts of the bureau, and the work on specifications, mentioned in the preceding article, account for about 30 per cent of the effort. The purely research projects may be divided as follows: projects undertaken at the request or suggestion of other Government departments, 20 per cent; of national technical societies, 20 per cent; and at the direct initiative of the bureau, 30 per cent.

Some of the work of various sorts done for Government purposes is published and much of it has direct or indirect application to industrial and scientific problems. Nevertheless, there can be applied to research aimed to be for the direct benefit of metallurgical industries or to produce scientific information, (aside from research primarily for other Government departments) but half of the funds allotted for metallurgical work.

In the early days almost the entire effort was placed on fundamental scientific problems chosen by the bureau. During the War the metallurgical resources of the bureau were, of course, occupied entirely with war problems and were utilized by many other Government agencies. Such utilization bids fair to continue on about the present basis.

Military Projects—7 Per Cent

Three projects, partly handled on transfer funds from the Army and Navy but necessitating considerable cooperative expenditure of bureau funds, have been gun erosion, special applications of air-hardening steels, and work on "sprayed" metal coatings. Publications are seldom made on these projects, the reports being of a confidential nature.

Steel for Gages—6 Per Cent

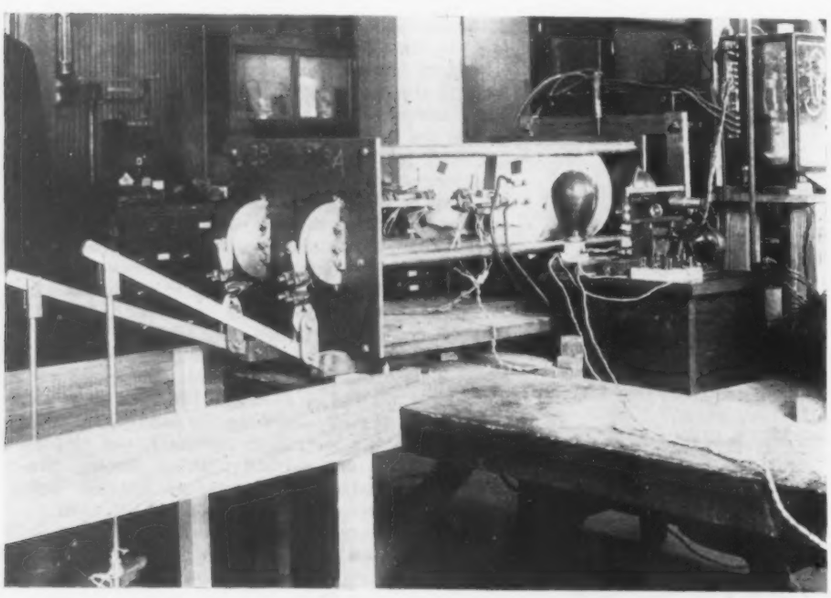
At the request of the Army, a study of the dimensional changes in steel for gages and of the wear of gages in service has been going on for several years. A group of producers and users, the "Gage Steel Committee," has kept in touch with the work and several automobile firms are cooperating in the service wear tests. The work has involved study of internal stresses due to quenching, as well as of changes on tempering and aging.

While more such theoretical work might profitably be done, not so much stress will be laid on this subject in the coming year. A series of gages is being made, using steels and heat treatments of promise, on the basis of previous work, for minimum dimensional changes. These, with the cooperation of the division of weights and measures, will be stored and measured (to a hundred-thousandth of an inch in a 4-in. length) at intervals. Service wear tests will be continued, also.

High-Speed Steel—6 Per Cent

Suitability of high-speed tool steel for roughing cuts is of importance in making big guns and, for

*Chief, Division of Metallurgy, United States Bureau of Standards. This article supplements that at page 461, THE IRON AGE, Aug. 20, and is published by permission of the director of the bureau.



Two of the Eight "Flow Test" Units for Study of the Properties of Metals at High Temperatures. The specimens are mounted within the electric furnaces, whose temperature is regulated by controller at extreme right. The weights at the extreme lower left impose stress on the specimens through the lever system. A window in side of furnace (hidden by the electric light) can be opened and the elongation of the specimen measured by the traversing telescope

Small Cupola at the Bureau of Standards, providing Both for Experimental Work on Cast Iron and for Making Castings for Scientific Instruments Used at the Bureau and Constructed in Its Shops

some years, the problem was studied in cooperation with the Naval Gun Factory, where much of the work was previously done. It is now done at the bureau, and wholly upon bureau funds.

The performance of the three prominent types of high-speed tool steel has been exhaustively studied, and a related problem, the machineability of various alloy steels treated to various strengths, is under way. Alloy steel manufacturers have cooperated by supplying the large test "logs" for this phase of the project.

The effect of changes in composition of the tool steel is being studied, the effect of tantalum and of nickel being among the points investigated. The manufacturer of an electric brass melting furnace has installed a furnace without charge. By the use of a special magnesia lining worked out by the bureau on the basis of its experience with refractories for melting pure iron and platinum, the furnace has been adapted to laboratory use on steel. High-speed steels of standard compositions, made in it, show performance equal to that of good commercial brands of similar composition. The preparation of special alloys required in several projects is facilitated by this furnace.

Duralumin—1½ Per Cent*

Work on the endurance properties of thin sheet duralumin, for the Navy (Bureau of Aeronautics) and the National Advisory Committee for Aeronautics, and the design of special fatigue machines, especially of a new design for high-speed testing, have been in progress for some time in the engineering mechanics section. The metallographic work required has been done by the metallurgical division.

Various cases are known where duralumin parts of airplanes and airships have become embrittled by exposure, usually to sea-air, and notably in the case of spilling of the calcium chloride "anti-freeze" for the engine condensate of the Los Angeles. Embrittlement has in some cases occurred even in storage. These cases have been referred to the bureau for study, this work being included under "tests for other Government departments." The potential seriousness of the situation, whereby duralumin showing no exterior change may develop intercrystalline brittleness involving almost complete loss of ductility, calls for attention, else the reliability of air craft using duralumin will be questionable.

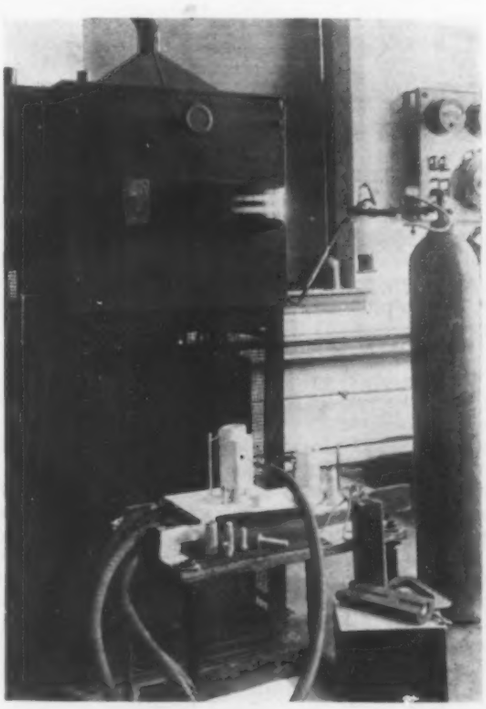
Fortunately, it is certain, from the large proportion of duralumin that is free from this deterioration, that the problem is susceptible of solution, and the probable causes for failure and means for their avoidance appear in sight. But definitely to establish the causes and lay down exact precautions for their avoidance will require rather extensive research; hence this problem is one of the major projects for the next fiscal year. This is one of the few new projects planned.

Tarnish-Resisting Silver Alloys

While this has been a major project during the past fiscal year, it has been almost entirely supported by funds transferred from the Bureau of Mines, from an appropriation made by Congress for the study of the extension of uses for silver. Because Standards had previously worked out methods for testing resistance to tarnish, and had an experimental rolling mill and other equipment needed in the work, this phase of the problem was turned over to Standards, to avoid duplication of equipment. A large number of silver alloys have been examined in considerable detail.

No alloys of sterling fineness that can be left in hard-boiled eggs overnight without traces of tarnish have been found, and there appears little hope for a truly non-tarnishing sterling. On the other hand, there are a dozen alloys, chiefly those based on zinc or cadmium as main alloying element, which can be made of sterling fineness, are suitably workable and have satisfactory appearance, and properties which are markedly more resistant to tarnish than ordinary sterling. While they will tarnish, their rate of tarnishing is much slower and they would require less attention from the housewife.

If one is content to use an alloy scarcely or not at all distinguishable from sterling, but containing only 70 to 75 per cent of silver, a very high degree of



High-Frequency Induction Furnace Used at the Bureau for Melting Platinum, Silver and a Wide Range of Alloys. Special refractory crucibles, whose composition varies according to the material to be melted, are made up at the bureau for use in the furnace

*These percentage figures refer to the proportion of division funds expended on the various projects in the past fiscal year.

tarnish resistance can be attained. For parts of scientific instruments and for silver thread, lace and insignia of officers in military, naval and fraternal organizations, such alloys offer promise. An interesting by-product is an alloy of about 60 silver, 40 zinc, which, on a cut surface, takes on a beautiful wild-rose pink that has decorative possibilities. This project is practically completed and will not be active in the coming year.

Soldered Joints—1/3 Per Cent

A more prosaic and minor project, suggested by a request for information by Army Air Service, has been a study of the ability of soldered joints to hold up under sustained loading.

Chromium Plating

A metallurgical project of the chemistry division for the Bureau of Engraving and Printing has been the development of wear-resisting chromium plating for the plates from which Government bonds are printed. The Bureau of Engraving and Printing estimates that the superior wear resistance will save the Government several hundred thousands of dollars a year.

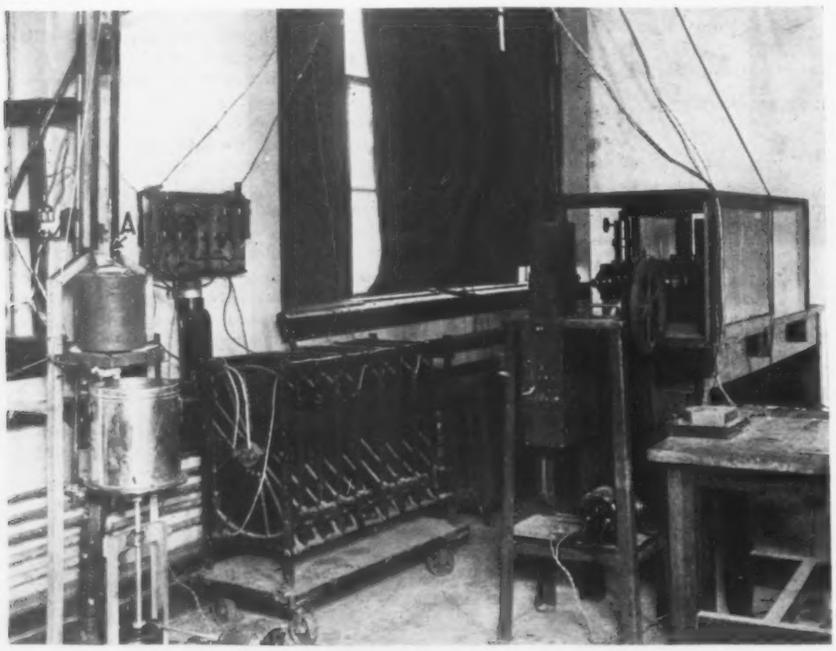
Corrosion—8 Per Cent

Coming now to projects requested by technical societies, the subject of corrosion and corrosion-testing, studied in cooperation with the American Society for Testing Materials, accounts for more of the funds than any other single project with the exception of the comprehensive project of "gases in metals." It has been alleged *that the country's loss due to corrosion approximates $300,000,000 per year. The development of uniform methods of accelerated corrosion testing, in wide enough variety to be analagous to various conditions of service, is of fundamental importance. Stacks of corrosion data exist, determined by all sorts of methods, which cannot be correlated and whose meaning is obscure. The first step in remedying this situation is to select apparatus and methods that will give concordant results in different laboratories.

If such methods are universally used, in addition to any special tests chosen to suit the problem or the taste of the investigator, the universal methods will serve as a least common denominator and intercomparison of materials will be facilitated. To this end, the A. S. T. M. is carrying on a huge cooperative project involving half a dozen types of tests on half a dozen non-ferrous alloys in half a dozen corroding media. Some 50 laboratories are working on the project, though few laboratories are using more than one or two types of test.

The bureau is making all the types of tests, paying especial attention to the electrolytic method, and in addition has attended to the preparation, surfacing and distribution of the thousands of test specimens used by all the cooperating laboratories.

While this program is well advanced, its completion will take months more. As the apparatus is freed from this work, an equally comprehensive program of work on zinc-coated materials for another A. S. T. M. committee will be begun, in which accelerated laboratory corrosion tests will be run for comparison with the exposure test. Through a research associate, it is planned to extend this work to include a study of the relation between laboratory tests and larger scale tests to simulate culvert service.



Quenching Media Are Studied in the Tin Can at Left, which Rests on a Pedestal, Rotatable for Stirring. Over the can is an electric furnace that can be opened at top and bottom. A steel specimen (shown at A, over the furnace) has a tiny thermocouple inserted into it and held tightly in contact with it. The thermocouple holder makes a watertight connection with the specimen, which is heated to the desired temperature in the furnace and then dropped into the quenching bath. The way the specimen cools is recorded by the thermocouple, in circuit with a tungsten "string" in the field of the strong electromagnet

Properties of Metals and Alloys at High Temperatures —6½ Per Cent

Power plant and turbine designers, valve manufacturers, builders of oil-cracking stills, chemists dealing with nitrogen fixation, furnace designers and others are loudly calling for new materials to stand up under increasingly high temperatures, and for more accurate data on the properties of known materials at such temperatures. The bureau has been working in this field for several years, and now that the A. S. T. M. and the A. S. M. E. have a joint committee to study the subject, is orienting its work so as to aid and supplement the committee's work, at its request.

Many steels and special heat-resisting alloys have been studied by ordinary tensile tests at elevated temperatures. The utility of such tests for engineering design of structures to operate at high temperatures has not been certain, so a correlation was sought between the short-time tests and tests under long-sustained loading. This work indicates that, in some carbon steels, the proportional limit of ordinary tensile tests at elevated temperatures corresponds to the ability to sustain load at those temperatures without distortion—this, to a degree sufficient to make the data obtained by the quicker and cheaper test satisfactory for use by the engineer, with, of course, a suitable

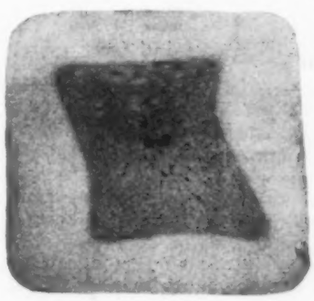
*Farmer, F. M. Presidential address, American Society for Testing Materials, June, 1925.

factor of safety, while the tensile strength is a figure quite useless for the purpose.

It is probable that the case will be the same for alloy steels and the special heat-resisting alloys, and the work is being extended to these, eight flow-test units being in operation. A study of the effect of the composition of the special alloys is contemplated.

Cast Iron for Enameling—2½ Per Cent

In the enameling industry, trouble from blistering is experienced in the enameling of bath tubs and similar articles, when certain kinds of pig iron, notably Northern iron, are used unless diluted with scrap, re-



Specimen, Approximately Natural Size, Rolled from the Top of an Ingot of Effervescing Steel, Made Without Additions in the Mold, Shown After Deep Etching. Upon carburizing, the inner segregate was found to be "abnormal steel," while the outside was normal

melted metal or Southern pig. This has resulted in the use of pig iron from a distance, with high freight costs. Two pig irons of identical composition, as shown by ordinary analysis, but from different sources, may behave very differently as to blistering.

The cause for this phenomenon is being studied in cooperation with the enamel section of the ceramics division, at the request of the American Ceramic Society. The behavior alleged has been found to exist under carefully controlled laboratory conditions, and on melting in the cupola and the electric furnace.

Spectroscopic analysis has so far failed to reveal the presence of unusual elements to explain the behavior. Analysis for total oxygen, hydrogen and nitrogen does not indicate that the irons that blister contain more gas or gas-forming elements than those that do not. Blistering is worse in a certain range of enameling temperatures and metallographic examination indicates some difference in the size and distribution of the graphite. These facts lead to the hypothesis that the blisters are formed by reaction of surface graphite with reducible oxides of the enamel. This hypothesis is being tested and, if it is borne out, methods for controlling the graphite or removing it from the surface will be studied. The reason for the difference in the graphite, or whatever other difference may be the cause, is still obscure.

Wire Screen Cloth—1 Per Cent

Selection of suitable non-ferrous alloys for wire screen cloth to exclude insect pests involves the question of extreme resistance to corrosion, and makers do not agree as to the best materials. They sought an impartial comparison, the matter was taken up by an A. S. T. M. committee, and the bureau was requested to carry out both laboratory and exposure tests. The former are under way; the latter have been started at the bureau in Washington and at the Bureau of Mines at Pittsburgh, and will soon be begun at Norfolk by the Navy, and in the Canal Zone by the Panama Canal Commission.

Other Projects Cooperative with Technical Societies—2½ Per Cent

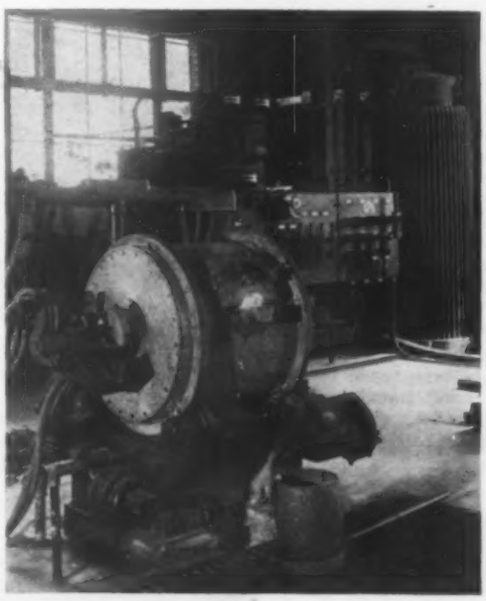
Gas-in-metals analyses and other work for the Joint Committee on Phosphorus and Sulphur in Steel (A. S. T. M., etc.), metallographic work for the Committee on Welded Rails (American Welding Society), work on classification of molding sands and development of sand testing methods for the Joint Committee on Molding Sand Research (American Foundrymen's Association), and tests of the scratch method of hardness testing, for the A. S. T. M. and A. S. M. E., are less extensive cooperative projects.

Gases in Metals—8½ Per Cent

Half a dozen major projects and an equal number of minor ones, taken up at the initiative of the bureau on suggestions from various sources, remain to be considered. One of the oldest of these is the study of gases and gas-forming elements in metals. While the solubility of gases in metals must be studied, and the adsorbed gas must ultimately be differentiated from the gas-forming elements held as compounds, the foundation for this work must be the analysis for total oxygen, hydrogen and nitrogen. Prolonged and painstaking work in the trial of many suggested methods and in the development of special apparatus and technique has resulted in accurate methods for oxygen and hydrogen, by fusion with graphite in vacuo in the high-frequency induction furnace.

Conditions for the reduction of even the most refractory oxides met in steel, such as Al_2O_3, TiO and ZrO, have been worked out. Similar work is now being done on nitrides, both the modified Allen method and a vacuum fusion method being studied. This work is well along, and these methods are being applied to ferrous alloys in which variations in these elements are suspected of an influence on the behavior of the alloys.

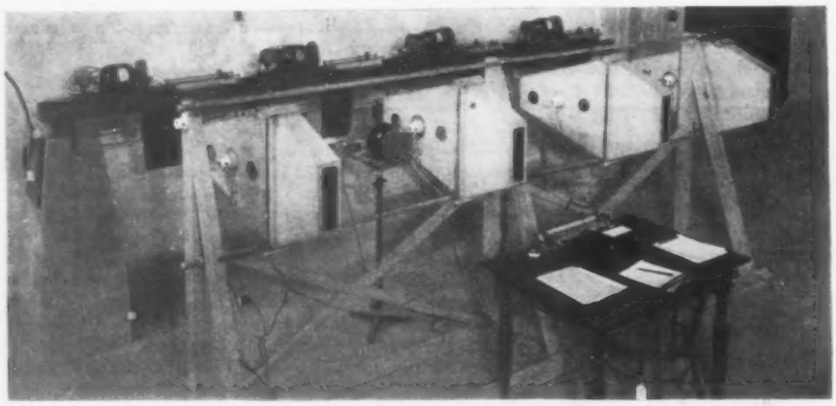
Sheet steel for welding, "blistering" cast irons, some of the steels studied by the Joint Committee on Sulphur and Phosphorus, a series of coke and charcoal irons on which other data have been published by Professor Jominy of the University of Michigan and which is of interest in its relation to the "oxygenated cast iron" theory, "abnormal" steels, and many less



Rocking Electric Arc Furnace Provided with Two Shells, One, as Shown, for Brass Melting; the Other, Lined with a Special Electrically Sintered Magnesite Refractory, for Melting Steel. High-speed steel of equal performance to high-grade commercial steel of similar composition has been thus made

extended series have been analyzed. The work is to be extended to non-ferrous alloys.

This work has aroused considerable interest. One large metallurgical laboratory has installed a duplicate of the apparatus used at the bureau, and sent a man there to study the methods, while the Swedish Academy



Four Endurance-Testing Machines Used in the Engineering Mechanics Section of the Bureau of Standards for Testing Thin Sheet Metal. These have been used in an extensive study of the fatigue-resisting properties of duralumin for aircraft, and are specially designed to produce definite and measurable stresses in the specimens. Stress is measured with an optical lever system

of Engineers now has a research fellow, Dr. B. Kjerrman, in residence, for the same purpose.

Quenching Problems—7 Per Cent

By means of the Einthoven string galvanometer, it is possible to record photographically the temperature changes during the few seconds elapsing in the quenching of a piece of steel. This allows evaluating the quenching properties of the steel and the quenching power of the coolant. The various factors affecting the rate of cooling, the effect of initial temperature, of mass, and the differences in the behavior of different coolants have been studied. Relations have been worked out so that, with a minimum of experimental work, it can be predicted what sizes, in simple shapes, of a given steel, will harden throughout in a given coolant. A correlation between the quenching ability of a coolant and its other properties is being sought, and pressure quenching is being studied.

Steel for Carburizing, "Abnormal" Steel—3½ Per Cent

The occurrence of soft spots in carburized steels, and differences in the grain size of the case, show variations in different heats of steel of the same nominal composition. Those which do not carburize properly are termed "abnormal," and certain tests for the detection of abnormal steels have been suggested and attempts made to locate the cause. There is a real difference between normal and abnormal steels, which appears not only in carburizing steels but in high-carbon steels. The cause for the difference is obscure.

Several steel users and producers have requested the bureau to study the cause and to examine the validity of the tests suggested. Many lines of attack have been tried, the most promising being the correlation of the furnace history of the heat, and the "deoxidation" practice, with the "abnormality." Through the courtesy of a steel maker several heats were given different deoxidation treatments and all the variables carefully noted. One of these heats is interesting in that it gave bars with an abnormal center and a normal exterior.

It appears possible to modify carburizing practice so as to eliminate the trouble from soft spots, but not so easy to isolate the cause of abnormality. The usual explanation, submicroscopic nuclei affecting the grain size, is not easy to examine experimentally. This work has been in progress for a couple of years and will continue. The Bureau of Mines is about to take up work on some phases of the problem and the two bureaus will work in close cooperation.

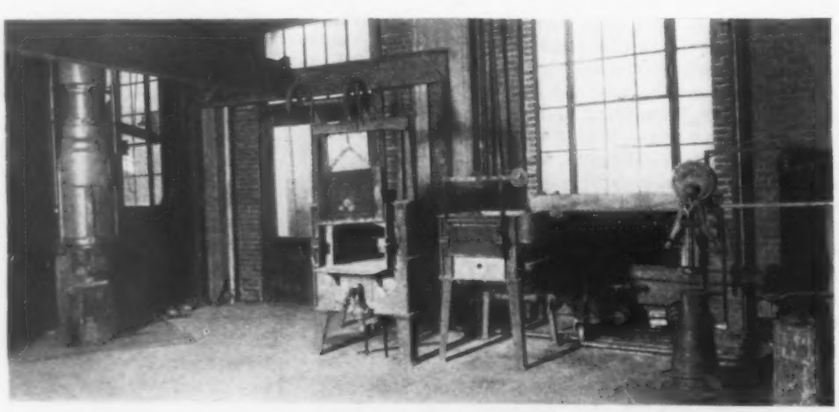
Pure Zinc and Its Alleged Allotropy—2½ Per Cent

One of the zinc producers has made zinc 99.997 per cent pure. With the cooperation of other divisions, various properties of this very pure material have been examined, and a special study was made of the alleged allotropy of zinc. The discontinuities in properties at elevated temperatures, which some investigators allege to exist and to be due to allotropy, appear explainable on the basis of recrystallization under stress, rather than by allotropy. Modern knowledge of the properties of single crystals, refined metallographic technique and the application of the X-ray spectrometer to the study of crystal structure have all been required in this work.

While the work on zinc is nearly complete, the study of the properties of pure metals, as fast as they are produced in greater purity, is a continuing project. It is claimed that thorium, chromium, and vanadium are being produced in better purity than heretofore by one firm, and it is hoped that sufficient of these metals for comprehensive study will soon be available. Work on very pure nickel is contemplated, also.

Pure Iron and Its Alloys—2 Per Cent

Perhaps the most fundamental work that can be done in the metallurgy of iron and steel is the study of very pure iron and its alloys. The early work of



Press, Trip-Hammer and Heating Furnaces, Bureau of Standards. These are used both for experimental work and in the making or repairing of equipment

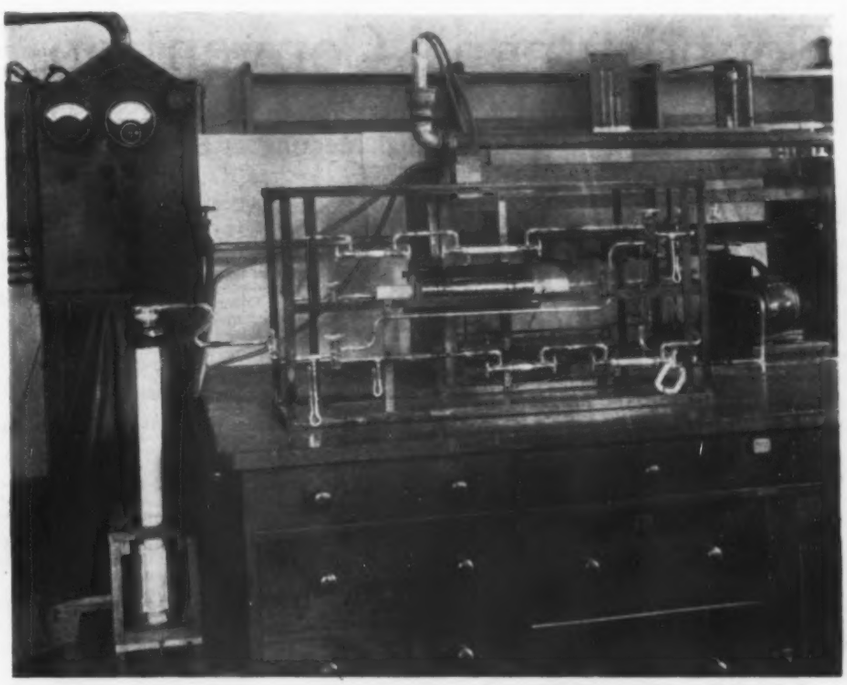
Burgess and his collaborators* on pure iron, work of a quality in which the bureau takes much pride, was followed by a study of some alloys of pure iron.

It has not been feasible to do much in this field in the last couple of years, but the preparation of pure electrolytic iron, its further purification, the hardening of pure iron by thermal means, the metallographic properties of pure ferrite, the solubility of carbon in ferrite and a few problems in the thermal analysis of iron and its alloys have received some attention. It is hoped that other problems in hand may be cleaned up so that opportunity may be found to pay more attention to this field.

Wear and Wear Testing—1½ Per Cent

Wear of moving parts causes a large national loss. While better lubrication may avoid some types of wear, there are many cases where lubrication is impossible. Road scraper blades, chains, rails, bearings, etc., each has its own problems in regard to wear. Several accelerated tests for wear resistance have been devised, and a number of these tried out at the bureau.

Various wear testing machines and methods give consistent results on a given series of steels, but seldom do two methods lead to the same conclusions, and some of the indications given by the tests are obviously erroneous when referred to behavior in service. This has been particularly noticeable in the case of service wear of gages. Wear testing is in a highly unreliable and chaotic state and an extensive study of the problem is required.



Determination of Oxygen and Hydrogen in Metals by the Vacuum Fusion Method. The sample is placed in a gas-free graphite crucible in the bottom of the silica tube at the left. The system is evacuated by the pump at the right. By means of the high-frequency induction furnace about the bottom of the silica tube the sample is melted. The gases are caught in suitable absorbents in tubes in the train on the desk. The tubes are then detached and weighed

Metallographic Etching Reagents—1 Per Cent

Rational classification and use of reagents for metallographic etching, according to the chemistry of their action upon the constituents of metals and alloys, have been previously studied by the bureau in relation to copper, nickel, and alloys of these metals, and has recently been extended to alloy steels. As this phase has been completed, the project will not be active in the coming year, although the steady effort to improve metallographic technique along such lines as high-power photomicrography, oblique illumination and improved methods of polishing will continue.

Crystal Structure—2 Per Cent

The use of the X-ray spectrometer for study of crystal structure is still new enough so that its application to diverse metallurgical problems is not wholly a matter of routine, analagous to metallographic examination. The application of the apparatus to different problems has therefore been carried as a separate project. Many useful applications have been made. Attention has been paid to the measurement of intensity of the X-ray spectrum lines, as well as their location.

Effect of Severe Cold Work—1 Per Cent

Bureau experiments showing that severe cold rolling of some metals does not necessarily continually harden the material, but may finally soften it, have been questioned by some metallurgists. Results obtained in new processes of cold rolling and cold drawing being developed by commercial firms indicate, however, that continuous hardening does not take place. The problem is of theoretical interest as well, and some further work has been done on it. It is hoped to make a similar study of severe cold-drawing.

Spheroidizing of High-Carbon Steels—1 Per Cent

To get suitable machineability in some high-carbon steels, the cementite must be spheroidized. The spheroidizing process has been studied, and machineability tests of steels spheroidized in different ways are scheduled.

Density of Alloy Steels—1/3 Per Cent

Producers and consumers of special alloy steels are interested in the density of these steels in different conditions of heat-treatment. Because of their cost, the weight of a given sized bar or given volume of these steels needs to be known to a considerable degree of accuracy. The data desired by the industry not being known, the metallurgical division, in cooperation with the division of weights and measures, is obtaining it experimentally. This is the only entirely new metallurgical project, to which it had not previously been committed, taken up at the initiative of the bureau during the last fiscal year. The responsibility of the bureau for the determination of such fundamental constants seemed to justify a new minor project.

Other Minor Projects

The effect of nitrogen in steel, especially upon the equilibrium diagram as shown by thermal analysis, is being studied, but has not taken a great deal of time.

*See Bureau of Standards Scientific Papers Nos. 216, 236, 266, 296.

Other projects on which a little work has been done during the year are the study of impurities in bronze, metallic pipe jointing materials, mechanically puddled wrought iron, nickel alloys for hardware, and special alloys for use in making Brinell balls. Some work, not leading to any definite conclusions, has been attempted, but may not be carried further, on the composition of castiron for carwheels, a project left over from the days when the study of railroad materials was active. A specific appropriation for study of railroad materials was, for a short period, made by Congress, but this has not been made since the fiscal year 1921.

Extension of Work Hampered

A list of the metallurgical research problems which the bureau has been asked to study, but which it is unable to attack without wasteful delay and lack of concentration on the projects in hand, would be as long as that, and the problems as important as those, on which it is now engaged. The only way such new problems could be handled would be by their being financed by the industry through the medium of research associateships, which would provide the necessary personnel for increased activities.

Personnel is the neck of the bottle, since much equipment that would be useful in the study of new problems necessarily lies idle some of the time. Scheduling of the use of equipment needed in several different investigations is seldom a difficult problem. There is little useless or obsolete equipment, and much that could profitably be in service most of the time instead of a few days per month, were the staff large enough to keep it steadily in operation on productive work.

As was pointed out in the previous article, these accounts of the operations, the handicaps and the possibilities of this metallurgical work are being published in the hope that suggestions will be received from the readers of THE IRON AGE to aid the bureau in its effort most effectively to further the advancement of metallurgical science and industry.

While the bureau must be the final judge in allocating its funds to the projects taken up, the relative urgency and importance of the different problems competing for attention can best be determined with the advice and counsel of the industry. The bureau is public property and the public can benefit by its work in direct proportion to the attention it pays to guiding that work into the most profitable lines.

Foundrymen's Convention Program

Technical Papers for the Sixteen Sessions of Annual Meeting at Syracuse

A COMPREHENSIVE technical program of 16 sessions has been arranged by the program committee of the American Foundrymen's Association for the annual convention and exhibition to be held at Syracuse, N. Y., Oct. 5 to 9. On most of the days simultaneous sessions have been arranged. There are to be three sessions on non-ferrous subjects under the auspices of the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers. The latest revised program for all these sessions is as follows:

MONDAY, OCT. 5

2 p. m.—*Non-Ferrous Topics.*
Joint opening meeting, American Foundrymen's Association and Institute of Metals Division, A. I. M. and M. E.
"Some Refractory Problems in the Non-Ferrous Electric Furnace Casting Shop," by G. F. Hughes, Bridgeport Brass Co., Bridgeport, Conn.
"Temperature Control of Non-Ferrous Alloys," by R. L. Binney, Bunting Brass & Bronze Co., Toledo, Ohio.
"Atomized Coal System of Non-Ferrous Melting," by R. Black and C. L. Shafer, Gibraltar Bronze Co., Cincinnati.

2 p. m.—*The Gray Iron Foundry.*
"Continuous Iron Temperature Recorder on the Cupola Spout," by H. W. Dietert and W. M. Myler, United States Radiator Corporation, Detroit.
"The Effect of Heat Treatment on the Properties and Microstructure of Gray Cast Iron and Semi-Steel," by O. W. Potter, University of Minnesota, Minneapolis, presented on behalf of the Twin City Foundrymen's Association.
"Electric Melting of Cast Iron," by G. E. Lamb, Lamb Machine Co., Hoquiam, Wash.
"Synthetic Cast Iron," by G. S. Schaller, University of Washington, Seattle, Wash.

TUESDAY, OCT. 6

10 a. m.—*General Session.*
"Reducing Costs of Cleaning Ferrous Castings," by J. H. Hopp, Hopp-Paterson Co., Chicago. Contributed on behalf of the Chicago Foundrymen's Club.
"Some Inter-Relationships in Cast Iron, Wrought Iron and Steel Practice," by J. E. Fletcher, British Cast Iron Research Association. Annual exchange paper of the Institute of British Foundrymen.
"Foundry Progress, Past, Present and Future," by J. D. Towne, Dayton Steel Casting Co., Dayton, Ohio.

10 a. m.—*Aluminum and Aluminum-Alloys.*
Joint meeting of the A. F. A. and Institute of Metals Division, A. I. M. and M. E.
"Aluminum and Aluminum Alloys in Air-Craft," by Samuel Daniels, engineering division, air service, U. S. A., McCook Field, Dayton, Ohio.
"X-Ray Examination of Aluminum-Alloy Castings for Internal Defects," by R. J. Anderson, Cleveland.
"Aluminum-Alloy Permanent Mold Castings," by J. B. Chaffe, Jr., Permold Co., Cleveland.
"Mechanical Properties of the Aluminum-Copper-Silicon Alloy as Sand Cast and as Heat Treated," by Samuel Daniels and D. M. Waner, air service, U. S. A., McCook Field, Dayton, Ohio.
"Some Notes on the Founding of Light Alloys," by R. de Fleury, Paris, France. Presented on behalf of the Association Technique de Fonderie de France, as annual exchange paper.

12.15 p. m.—*Luncheon and Round Table Discussion.*
Joint Meeting of the A. F. A. and Institute of Metals Division, A. I. M. and M. E. Informal discussion of brass founding problems.

1.30 p. m.—*Foundry Costs.*
Discussion of Foundry Cost Accounting.

3 p. m.—*Apprentice Training.*
Discussion of questions and experiences pertaining to apprentice training in foundries.

3 p. m.—*Foundry Refractories.*
Discussion of questions pertaining to problems of foundry refractories in the steel, malleable and gray iron foundry.

6.30 p. m.—*Annual Dinner, Institute of Metals, A. I. M. and M. E.*

WEDNESDAY, OCT. 7

10 a. m.—*Steel Foundry Practice.*
"Making Miscellaneous Castings for Navy Use," by Lieut. Commander D. F. Ducey, U. S. Navy Yard, Puget Sound, Wash.
"Carbon Steel and Carbon-Vanadium Steel in the Converter," by S. R. Robinson, Industrial Works, Bay City, Mich.
"Low Cost in Electric Furnace Melting," by A. W. Gregg and H. R. Knox, Bucyrus Corporation, South Milwaukee, Wis.
Report of Committee.

10 a. m.—*Special Session, Institute of Metals Div., A. I. M. and M. E.*
"Special Nickel Brasses," by Oliver Smalley, New York.
"Notes on the Fatigue of Non-Ferrous Metals," by H. E. Moore, University of Illinois, Urbana, Ill.
"Endurance Properties of Non-Ferrous Metals," by D. J. McAdams Jr.
"The Annealing Cracking of Nickel-Silver," by E. O. Jones and E. A. Whitehead, Manchester, England.

10 a. m.—*General Papers and Committee Reports.*
Report of Committee on Corrosion.
Report of Committee on Pattern Equipment Standardization.
"Safety in the Foundry," by R. G. Adair, supervisor of safety, American Rolling Mill Co., Middletown, Ohio. Contributed on behalf of the Ohio State Foundrymen's Association.
"Foundry Management," by W. J. Barrett, Metropolitan Life Insurance Co., New York.
"Foundry Cost Accounting," by C. H. Scovill, Boston.

1 p. m.—*A Group Picture of Association Members and Guests Will Be Taken.*

1.30 p. m.—*Business Session.*
Address of President.
Report of Secretary-Treasurer.
Report of Resolutions Committee.
Report of Awards Committee.
Report of Election of Officers.

2.30 p. m.—*Sand Control in the Foundry.*
Report of Chairman of Joint Committee on Molding Sand Research.
Report of Chairman of subcommittee on Testing Foundry Sands.
Report of Chairman of subcommittee on Grading Foundry Sands.
Report of Chairman of subcommittee on Conservation and Reclamation of Foundry Sands.
"Some Examples of the Relation Between the Formation of Sand Deposits and Their Physical Character," by D. W. Trainer, Geology Department, Cornell University, Ithaca, N. Y.

"Testing Apparatus," by T. S. Adams, Cornell University, Ithaca, N. Y.
"A Novel Method of Tempering Sand," by Max Sklovsky, Deere & Co., Moline, Ill.

6.30 p. m.—*Entertainment*—Dancing, cards, etc., open to all members and guests.

THURSDAY, OCT. 8

10 a. m.—*Malleable Cast Iron.*
"Wage Limitations, Group Bonus Plans," by B. R. Mayne, Saginaw Malleable Iron Co., Saginaw, Mich.
"One of the Causes of Variation in Rates of Graphitization of White Cast Iron," by H. E. Flanders and Anson Hayes, Iowa State College, Ames, Iowa.
"A Consideration of the Annealing Operation in a Malleable Foundry," by C. J. McNamara and C. H. Lorig, Stowell Co., Milwaukee.
"Catalysis of the Graphitization of White Cast Iron by the Use of Carbon Monoxide-Carbon Dioxide Mixtures When Applied Under Pressure," by Anson Hayes and G. C. Scott, Iowa State College, Ames, Iowa.
Report of Committee on Specifications for Malleable Castings.
"The Effect of Some Modifications of a Rapid Annealing Method on the Physical Properties of Malleable Iron," by Anson Hayes, E. L. Henderson and G. R. Bessmer, Iowa State College, Ames, Iowa.

10 a. m.—*Metallurgy of Cast Iron.*
"Nickel in Cast Iron," by T. H. Wickinden and J. S. Vanick, International Nickel Co., Bayonne, N. J.
"The Oxygen Content of Coke and Charcoal Cast Iron," by James R. Eckman and Louis Jordan, U. S. Bureau of Standards, Washington and W. E. Jominy, University of Michigan, Ann Arbor, Mich.
"Influence of Phosphorus on the Total Carbon Content of Gray Iron," by James T. Mackensie, American Cast Iron Pipe Co., Birmingham, Ala.
"Dilatometric Study of Graphitization," by Albert Portevin and Pierre Chevanard, Paris, France. Annual exchange paper, Association Technique de Fonderie de France.

2 p. m.—*Sand Research.*
Report of Sub-committee on Geological Survey.
"Practical Tests of Sand," by H. W. Dietert and W. M. Myler, U. S. Radiator Corporation, Detroit, Mich.
"The Life of Molding Sands," by C. R. Nevin, Cornell University, Ithaca, N. Y.

6.30 p. m.—*Annual Banquet.*

FRIDAY, OCT. 9

10 a. m.—*Gray Iron Foundry Practice.*
"Superheating Iron in the Cupola," by S. J. Felton, Ohio Mechanics Institute, Cincinnati.
"Effect Produced by Changing Size of Cupola Tuyeres," by J. Grennan, University of Michigan, Ann Arbor, Mich.
"Quality of Core Oils," by H. L. Campbell, University of Michigan, Ann Arbor, Mich.
"Desulphurization of Ferrous Metals," by G. A. Drysdale, Metals Improvement Co., Cleveland.

Announcement is made that up to this time there are three unassigned spaces in the Manufacturers Building and seven in the Grainger Building which are not yet taken by exhibitors. The secretary of the society predicts that this year's exhibition will be the largest since 1920 and that it will probably be the most interesting one ever held, judging from the plans of the various exhibitors.

Program for Safety Convention

The National Safety Council, 168 North Michigan Avenue, Chicago, has issued a tentative program for the fourteenth annual safety congress to be held at Cleveland, Sept. 28 to Oct. 2, inclusive. In addition to exhibits of safety devices there will be sessions devoted to all phases of safety work.

The metal section will hold its first session Tuesday morning, Sept. 29, at the Statler Hotel, and among the subjects to be discussed are the following:

Symposium of Fundamentals of Industrial Safety Education, discussed by M. E. Danford, works manager, American Rolling Mill Co., Middletown, Ohio, and by Phillip Stremmel, assistant general superintendent, National Enameling & Stamping Co., Granite City, Ill.

The Steel Worker and His Characteristics—A. T. Morey, General Manager, Commonwealth Steel Co., Granite City, Ill.

Transporting Steel Products Safely—J. A. Hughes, superintendent transportation and labor, Duquesne works, Carnegie Steel Co., Duquesne, Pa.

The Safe Handling of Molten Metal in the Foundry—E. H. Ballard, general foundry and pattern shop superintendent, River works, General Electric Co., West Lynn, Mass.

Record of Achievement in the Metal Industries—Dr. L. W. Chaney, Bureau of Labor Statistics, U. S. Department of Labor, Washington.

An A B C session to be held on Thursday, Oct. 1, will be presided over by Stephen W. Tener, manager accident and pension department American Steel & Wire Co., Cleveland. In this meeting, "Safety Committees" will be discussed by George Hodge, assistant manager industrial relations department International Harvester Co., Chicago, and "Maintaining Interest in Safety" will be the subject of an address by John A. Oartel, chief safety bureau Carnegie Steel Co., Pittsburgh.

Howard Coonley, president Walworth Mfg. Co., Boston, Mass., will be a speaker at the executive session to be held Monday afternoon, Sept. 28, at the Statler Hotel. His subject will be "Is Safety a Factor in Modern Industry?"

Hazards of punch press departments other than machine hazards will be the subject of an address by W. F. Dittmer, supervisor of safety Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., at the automotive session to be held Wednesday morning.

Planning for National Museum of Engineering and Industry

Under the leadership of Samuel Insull, as president, the organization for the National Museum of Engineering and Industry is being perfected. A committee on membership and publicity has been appointed and is instituting a campaign to increase membership. It consists of John W. Lieb, chairman, Fred R. Low, H. Foster Bain, John R. Freeman, F. A. Halsey and H. F. J. Porter, secretary, 29 West Thirty-ninth Street, New York.

It is the desire of the board of trustees to increase the membership to the extent that the dues will carry on the expenses of administering the early work in connection with the museum. There are four classes of membership at the following rates: Sustaining, $100

COMING MEETINGS

September

Institute of Metals. Sept. 1 to 4. Annual fall meeting, Glasgow, Scotland. G. Shaw Scott, 36 Victoria Street, London, secretary.

American Society of Mechanical Engineers, New Haven Section. Sept. 8 to 11. Fifth annual machine tool exhibition, Mason Laboratory, Yale University, New Haven, Conn. Ernest Hartford, 29 West Thirty-ninth Street, New York, vice-chairman.

Iron and Steel Institute. Sept. 9 to 11. Fall meeting, University of Birmingham, Birmingham, England. G. C. Lloyd, 28 Victoria Street, London, S. W. 1, secretary.

American Society for Steel Treating. Sept. 14 to 18. Seventh annual convention. Municipal Auditorium, Cleveland. W. H. Eisenman, 4600 Prospect Avenue, Cleveland, secretary.

Association of Iron and Steel Electrical Engineers. Sept. 14 to 19. Annual convention and exposition, Commercial Museum, Philadelphia. J. F. Kelly, 513 Empire Building, Pittsburgh, secretary.

American Electrochemical Society. Sept. 24 to 26. Fall meeting, Chattanooga, Tenn. Colin G. Fink, Columbia University, New York, secretary.

National Safety Council. Sept. 28 to Oct. 2. Annual meeting, Cleveland. W. H. Cameron, 168 North Michigan Avenue, Chicago, managing director.

October

American Gear Manufacturers' Association. Oct. 1, 2 and 3. Semi-annual meeting, West Baden Springs Hotel, West Baden, Ind. T. W. Owen, 2443 Prospect Avenue, Cleveland, secretary.

American Foundrymen's Association. Oct. 5 to 9. Annual meeting, State Fair Grounds, Syracuse, N. Y. C. E. Hoyt, 140 South Dearborn Street, Chicago, secretary.

American Welding Society. Oct. 21, 22 and 23. Fall meeting, Massachusetts Institute of Technology, Cambridge, Mass. M. M. Kelly, 33 West Thirty-ninth Street, New York, secretary.

per year; contributing $75; affiliate, $25, and member, $10.

The cooperation of the four national engineering societies has been assured by the selection of two representatives of each on the board of trustees of the museum. The representatives selected are: from the American Society of Civil Engineers, John R. Freeman, past-president of the society, and George T. Seabury, secretary of the society; from the American Institute of Mining and Metallurgical Engineers, George C. Stone, chief metallurgist New Jersey Zinc Co., and H. Foster Bain, secretary of the institute and late director of the Bureau of Mines; from the American Society of Mechanical Engineers, Fred R. Low, past-president of the society, and L. P. Alford, vice-president of the Ronald Press Co.; from the American Institute of Electrical Engineers, John W. Lieb, vice-president and general manager of the New York Edison Co., and Edward R. Hubert, assistant secretary of the institute.

Mr. Insull sailed on Aug. 18 for Europe, where he will make an extensive study of the important engineering and industrial museums. He will return in November with plans for the new American museum.

New Haven Machine Tool Meeting

Supplementing the account of papers and discussions scheduled for the machine tool exhibition and meeting at Yale University, New Haven, Conn., Sept. 8 to 11, under the auspices in part of the New Haven section of the American Society of Mechanical Engineers, as given in these columns Aug. 6, may be mentioned a meeting on Wednesday morning, Sept. 9, at 10.30, of a special research committee on metal springs. This will take place at Dunham Laboratory. On Thursday morning there will be a meeting of a special research committee on cutting and forming of metals.

Reinforcing Steel Convention

The Concrete Reinforcing Steel Institute will hold a semi-annual meeting at the Drake Hotel, Chicago, Wednesday, Sept. 23. The tentative program calls for a business session in the morning, a luncheon meeting, an afternoon meeting at which addresses will be given by four invited speakers and an evening dinner session, which will be followed by a motion picture film, just completed, showing a certain process. The invited speakers include: Charles F. Abbott, executive director American Institute of Steel Construction, New York, whose subject will be "Competition"; Clarence T. Kingsbury, president Rosslyn Steel & Cement Co., Washington, whose subject will be announced later; Richard L. Humphrey, chairman of the joint committee, Philadelphia, on the future work of that body to determine the proper specifications for concrete reinforcing steel; and William F. Zabriskie, vice-president Gabriel Steel Co., Detroit, who will talk on the displacement of structural steel by concrete reinforcing steel.

Automotive Engineers to Hold Technical Sessions During Steel Treaters' Week

The Society of Automotive Engineers is to hold a joint meeting in Cleveland during the week of the annual convention and steel exhibition of the American Society for Steel Treating. Three sessions have been arranged for the mornings of Sept. 14, 15 and 16. The program for these sessions, which will be held at the Hotel Winton, is as follows:

MONDAY AFTERNOON, SEPT. 14

Sheet Steel Fabrication Session:

"Hot Stamping Methods," by B. F. Keyes, Mullins Body Corporation.

"Sheet Steel Fabrication," by Syd Smith, Studebaker Corporation of America.

Training Session:

"Training of Mechanics for Production Work," by Mrs. Lillian M. Gilbreth, Frank B. Gilbreth, Inc.

"Foreman Training," by F. T. Jones, White Motor Co.

"Training of Shop Foreman," by Louis Ruthenberg, Yellow Sleeve Valve Engine Works.

TUESDAY MORNING, SEPT. 15

Gear Session:

"Coordinating Designs and Production Methods in Gear Development," by P. L. Tenney, Muncie Products Division, General Motors Corporation.

"The Problem of Gear Production," by Earle Buckingham, Niles-Bement-Pond Co.

WEDNESDAY MORNING, SEPT. 16

Machine Tool Session:

"Machine Tool Needs of the Automotive Industry," by R. M. Hidey, White Motor Co.

"The Application of Machine Tools to Specific Duties," by A. R. Kelso, Continental Motors Corporation.

"Machine Tool Selection," by A. B. Nickerson, Hupp Motor Car Corporation.

Gaging and Inspection Session:

"Gages, Jigs and Fixtures—Their Development and Application," by J. Gustaf Moohl, Cleveland Automobile Co.

"Inspection Methods," by C. B. Durham, Buick Motor Company.

Purchasing Agents' Annual Meeting

The eleventh annual convention of the National Association of Purchasing Agents will be held at the Ambassador Hotel in Los Angeles, Cal., June 14 to 17, inclusive, according to an announcement by H. W. Christensen, president of the Purchasing Agents' Association of Los Angeles and purchasing agent of the Llewellyn Iron Works. An important feature of the convention will be the informashow, an exhibition of manufactured products to be held in the Ambassador Hotel Auditorium. Robert M. Sedgewick, of the Standard Chemical Co., Toronto, Canada, is president of the national organization, which has 4500 members, and is regarded as representing a combined purchasing power of more than five billion dollars.

For a National Association of Foremen

T. B. Fordham, works manager Delco Light Co., Dayton, Ohio, who is president of the Ohio Federation of Foremen's Clubs, is calling a meeting of delegates from various city foremen's clubs and of other persons interested, at the Y. M. C. A. building at Dayton, Ohio, Oct. 8, to form the National Association of Foremen. The rapid growth of foremen's clubs in many cities of the country and the keen interest of managements and foremen in the subject of better foremanship have suggested the expansion of the Ohio Federation to take in clubs and individuals outside of Ohio. About 1500 men attended the second annual convention in May of this year and many new clubs are to be formed in September. Any factory foremen's club and any organizations or persons interested in raising the standard of foremanship are invited to be represented at this meeting.

Personal Changes in Bureau of Mines

In connection with the organization of the division of mineral resources and statistics of the Bureau of Mines, Department of Commerce, under the direction of F. J. Katz, engineer in charge, W. W. Adams has been designated as executive assistant to the engineer in charge. Mr. Katz, in addition to his general administrative duties, will supervise the collection of statistics relating to metals and non-metals (except fuels). F. G. Tryon will be in charge of the coal and coke section. The petroleum and natural gas section will be under the direction of G. R. Hopkins; mine accidents will be under W. W. Adams; and foreign mineral reserves under B. L. Johnson. The Salt Lake City, Utah, field office will be conducted by V. C. Heikes; the Denver, Colo., office by C. W. Henderson; the San Francisco office by J. M. Hill; and the Joplin, Mo., office by J. P. Dunlop.

The General American Tank Car Corporation, Chicago, has purchased the properties of the Lone Star Tank Co., situated at Fort Worth and Wichita Falls, Tex., where it will manufacture and repair railroad tank cars.

Quick Loading Sand Blast Barrel

Loss of time frequently experienced in the loading and unloading of sand blast barrel charges is said to be largely eliminated in a new quick-loading type of barrel which has been announced by the Pangborn Corporation, Hagerstown, Md. A full charge of 16 cu. ft. is loaded from the floor in 35 sec. by an automatic loading device, which is a feature of this barrel. A large door opening in the drum accommodates a steel skip, raised by trolley or crane, traveling in guides on the front of the barrel in dumping position. The clearance beneath the barrel is sufficient to receive a receptacle large enough to contain the entire barrel charge, while the interior of the barrel is so designed that the entire load is dumped by simply rotating the barrel.

The barrel is of the direct pressure type. The sand blast machine has two mixing chambers with individual lines to each nozzle of the barrel operated by single control. The mixing chambers are heavy castings with large openings and passages to provide ample abrasive flow with larger nozzles at lower pressures. A feature

Sand-Blast Barrel Fitted for Loading by Skip and Dumping by Rotation of Barrel

is the nozzle adjustment. The nozzles are held in a ball-and-socket joint in frames on the side of the casing and are instantly removable. Both frame and joint permit of quick, easy adjustment. This adapts the barrel without loss of time to all classes of work. All operating parts are on the outside of the sand blast machine. Access to the interior of the sand tank is quick and easy through a choke relief opening without dismantling the mixing chamber or disconnecting the hose.

The capacity of the sand blast tank is 5000 lb. of sand or 12,500 lb. of steel abrasive, sufficient to clean more than the average load. This permits refilling the sand blast tank while the barrel itself is being loaded and unloaded, giving practically continuous operation. Complete unloading and loading of the barrel, and refilling the sand blast machine "from charge to charge" is accomplished in five minutes or less.

The barrel drum is steel tired and runs on manganese steel rollers, and all controls are on the sand blast side of the machine for convenience of operation. To meet the growing demand for direct motor drive equipment, a completely inclosed gear reduction drive made integral with the barrel, is interchangeable with the standard belt drive.

One of the barrels will be exhibited at the convention of the American Foundrymen's Association at Syracuse, N. Y., beginning Oct. 3.

Foundry Flask of Steel Plate and Welded Parts

The Shanafelt Mfg. Co., Canton, Ohio, is now using the electric welding process for the manufacture of foundry flasks. The welded flasks are made in a wide

Light-Weight Flask of Steel

range of sizes from small flasks for bench work up to large heavy duty flasks. The steel plate used in their manufacture ranges from 3/16 to ½ in. in thickness. The pin lugs and handles are welded to the flasks. Advantages claimed for the flask made by the welding process include lightness and strength. When cross bars are supplied these are also welded to the flask. The handles are of steel in the interest of lightness, and the elimination of splice bars and rivets tends to reduce the weight. The arc welder made by the Lincoln Electric Co., Cleveland, is used for welding. The illustration shows a typical heavy duty welded flask.

Elevating Tractor Which Can Carry Load Tilted

Designed primarily for handling tin plate in a mill or warehouse, the Elwell-Parker Electric Co., Cleveland, has brought out a new motor-driven elevator type

Tilting a Load of Sheets Makes Them Aline Themselves While Being Carried

tractor, an outstanding feature of which is that the vertical uprights on which the elevating forks are mounted can be tilted to an angle of 40 deg. to permit the carrying of the metal in an inclined position. When

the sheets are moved in this position they will tend to aline themselves during the travel and it is stated that all the edges will be even when the destination is reached even though they may have been slightly out of alinement at the start.

The vertical and rocking motion of the forks is obtained by means of a double drum electric hoist, the upper drum rocking the uprights while the lower drum elevates the load. The upper drum cable pulls the vertical uprights toward the operator against a pair of heavy springs. These springs with the cable form a cushion rest for the load. When the cable is fully paid out the uprights pitch forward slightly, this movement throwing the tips of the forks downward for insertion beneath the load. Each of the two motions is obtained independently of the other when approaching the load. When taking a load the forks are raised to the proper height and thrust beneath the load. The stack of tin plates can then be raised to a greater height or lowered to the floor or it may be inclined to the 40 deg. angle by rocking the frame, in which position it is transferred to its destination and placed on other stacks or on the floor of a car or warehouse. The forks fold back on the truck so that its overall length can be reduced when it is placed on an elevator.

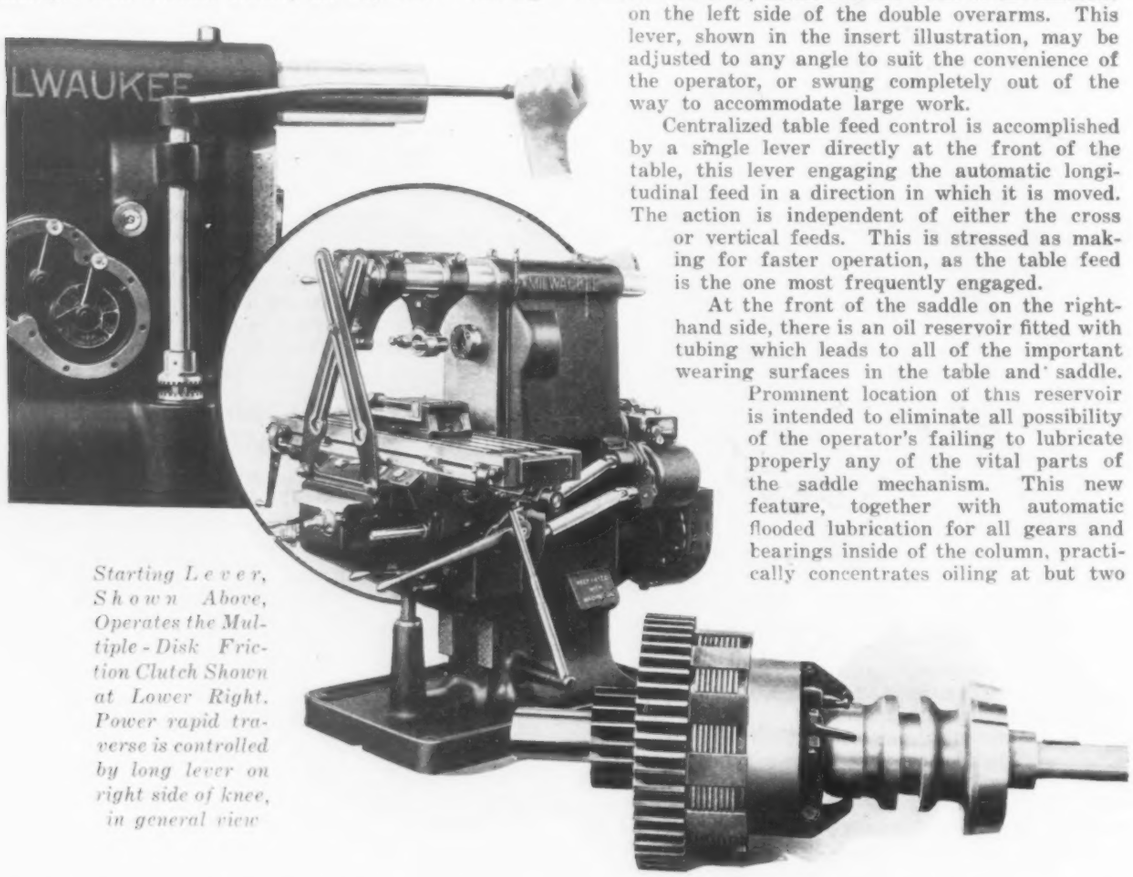
Power for the motor is supplied from a storage battery. All the wheels steer so that the tractor can be turned on a short radius, as on congested floors. The wheel and motor bearings are of the ball or roller type. The capacity is from 3000 to 5000 lb.

In addition to handling tin plate the tractor can be used of course for moving such products as sheets, bales, barrels, material in rolled form, export cases and bulky articles in odd shapes.

IMPROVE MILLING MACHINE

New Features Include Multiple Disk Friction Clutch and Adjustable Starting Lever

Power rapid traverse to the table of all models of machines larger than the No. 1 and No. 2 S sizes; multiple disk friction clutch; an adjustable starting lever; centralized oiling for saddle and table; and independent table feed control are new features added to the line of Milwaukee milling machines manufactured by the Kearney & Trecker Corporation, Milwaukee.



Starting Lever, Shown Above, Operates the Multiple-Disk Friction Clutch Shown at Lower Right. Power rapid traverse is controlled by long lever on right side of knee, in general view

Power rapid traverse to the table is controlled by the long lever shown on the right-hand side of the knee. Raising this lever causes the table to travel at the rate of 100 in. per min. in the same direction in which the table power feed is engaged. When the operator "lets go" of the lever, the normal table feed is again resumed.

The new multiple disk clutch, shown in the insert illustration, is claimed to work continuously under full load and to be smooth and positive in operation. The disks are amply separated when disengaged, eliminating all tendencies to drift and a cone type brake is provided for quickly stopping the spindle. Tools are not required for adjusting, and the pin adjustment provided is said to permit of quick adjustment that is uniform over the entire frictional area.

The new adjustable starting lever, which operates the friction clutch, extends to the front of the machine on the left side of the double overarms. This lever, shown in the insert illustration, may be adjusted to any angle to suit the convenience of the operator, or swung completely out of the way to accommodate large work.

Centralized table feed control is accomplished by a single lever directly at the front of the table, this lever engaging the automatic longitudinal feed in a direction in which it is moved. The action is independent of either the cross or vertical feeds. This is stressed as making for faster operation, as the table feed is the one most frequently engaged.

At the front of the saddle on the right-hand side, there is an oil reservoir fitted with tubing which leads to all of the important wearing surfaces in the table and saddle. Prominent location of this reservoir is intended to eliminate all possibility of the operator's failing to lubricate properly any of the vital parts of the saddle mechanism. This new feature, together with automatic flooded lubrication for all gears and bearings inside of the column, practically concentrates oiling at but two filling points. All models and sizes, Nos. 1 to 4, of the company's milling machines are now available with inclosed motor-in-base drive.

Domestic sales of oak leather belting in July are reported by the Leather Belting Exchange, which represents about 60 per cent of the total product, to have amounted to 345,709 lb., valued at $587,706, or an average of $1.70 per lb. This is less than the figure for the preceding month, but more than that for July, 1924. In June the total was 367,583 lb., valued at $642,535, or $1.75 per lb., while in July last year the figures were 320,231 lb., $540,230, and $1.69 per lb.

Slight Gains Shown in Europe

Some Materials More Active—German Syndicate Making About Finished—Belgium Less Sanguine

(By Cablegram)

LONDON, ENGLAND, Aug. 24.

CLEVELAND pig iron market was idle last week, owing to local holidays. A small amount of business was done in foundry iron, at lower prices. Hematite shows a better market and prices are being maintained.

Foreign ore is still stagnant and no immediate revival is likely. Best Bilbao Rubio is quoted at 20s. ($4.86) nominal.

In finished iron and steel an easy undertone persists, though a seasonal improvement in demand is hoped for next month. There is good demand for light sheets, structural material and tubes. Other departments are mostly dull.

Sheets and Tin Plate

Rather more interest has been taken in tin plate latterly, some forward business having been effected. Fair sales have been made to Japan, South America and the Continent (Europe). Tin plate makers have been unable to agree to revive the stabilization or pooling schemes.

Galvanized sheets are steady, though Indian buying is somewhat quieter.

Black sheets are maintained at previous prices. Business in thick gages is slow, but there is fair demand for Japanese specifications.

On the Continent of Europe

Continental material is competing keenly, at gradually receding prices. In Belgium the big strike continues, but workmen are reported to be tiring. Resumption has been effected at Marchienne-au-Pont [Société Anonyme des Usines Bonehill, 2 blast furnaces; Société Anonyme des Laminoirs, Hauts-Fourneaux, Forges, Fonderies et Usines de la Providence, 4 blast furnaces and steel works; Société Anonyme des Usines et Acieries Leonard Giot, castings] on a compromise.

In France the steel makers anticipate that the railroads shortly will undertake extensive track renewals, owing to recent accidents.

In Germany the Raw Steel Syndicate is raising substantially the export allowances to working-up plants, to facilitate sales abroad.

SLIGHT IMPROVEMENT

German Market Shows Some Life—Syndicates About All Formed

BERLIN, GERMANY, Aug. 11.—Activity in the steel trade has increased to a certain extent. A fortnight ago such complete stagnation prevailed that the Raw Steel Syndicate decreed for August a 35 per cent reduction of production, as against 25 per cent in July. Almost simultaneously a revival of the market began, with a sharp rise in prices, but since then the market has again tended to sag. One cause of the revival was a better report from the engineering industry, but the main cause was the new progress made toward organization of syndicates which, it was foreseen, would put up home prices to a moderate extent.

The position as regards production is as follows: The production quotas of all members of the Raw Steel Syndicate total 14,700,000 tons a year. Semi-finished material is not embraced in the 35 per cent reduction of output and, allowing 600,000 tons for this, production is at present at the rate of 9,200,000 tons a year. In 1913, raw steel production in the then national area was 18,900,000 tons. Of this 1,300,000 tons were produced in Luxemburg, 2,100,000 tons on the Saar, 2,300,000 tons in Alsace-Lorraine, and 1,000,000 tons in East

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British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.86 per £, as follows:

Durham coke, del'd..	£0	19s.			$4.62		
Bilbao Rubio ore† ...	1	0½			4.98		
Cleveland No. 1 fdy.	3	13			17.73		
Cleveland No. 3 fdy.	3	9			16.76		
Cleveland No. 4 fdy.	3	8			16.52		
Cleveland No. 4 forge	3	7½			16.40		
Cleveland basic	3	11½			17.37		
East Coast mixed...	3	15½			18.34		
East Coast hematite	4	19			24.06		
Ferromanganese	15	10			75.33		
*Ferromanganese ...	15	5			74.11		
Rails, 60 lb. and up..	8	5	to £9	0s.	40.09	to	$43.74
Billets	6	10	to 7	5	31.59	to	35.23
Sheet and tin plate bars, Welsh	6	10	to 6	15	31.59	to	32.80
Tin plates, base box..	0	19	to 0	19¼	4.62	to	4.68
					C. per Lb.		
Ship plates	8	0	to 8	10	1.73	to	1.84
Boiler plates	11	10	to 12	0	2.49	to	2.60
Tees	8	2½	to 8	12½	1.76	to	1.87
Channels	7	7½	to 7	17½	1.60	to	1.71
Beams	7	2½	to 7	12½	1.54	to	1.65
Round bars, ¾ to 3 in.	8	12½	to 9	2½	1.87	to	1.98
Galv. sheets, 24 gage	16	2½	to 16	5	3.49	to	3.52
Black sheets, 24 gage	11	10	to 11	15	2.49	to	2.55
Black sheets, Japanese specifications	15	5			3.30		
Steel hoops	10	15	and 12	10*	2.33	and	2.71*
Cold rolled steel strip, 20 gage	18	0			3.90		

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron: (a)							
Belgium	£3	1s.	to £3	2s.	$14.82	to	$15.06
France	3	1	to 3	2	14.82	to	15.06
Luxemburg	3	1	to 3	2	14.82	to	15.06
Basic pig iron: (a)							
Belgium	3	0	to 3	1	14.58	to	14.82
France	3	0	to 3	1	14.58	to	14.82
Luxemburg	3	0	to 3	1	14.58	to	14.82
Billets:							
Belgium	4	14			22.84		
France	4	14			22.84		
Merchant bars:					C. per Lb.		
Belgium	5	7	to 5	8	1.16	to	1.17
Luxemburg	5	7	to 5	8	1.16	to	1.17
France	5	7	to 5	8	1.16	to	1.17
Joists (beams):							
Belgium	5	3½	to 5	4½	1.12	to	1.13
Luxemburg	5	3½	to 5	4½	1.12	to	1.13
France	5	3½	to 5	4½	1.12	to	1.13
Angles:							
Belgium	5	18½	to 6	0	1.28	to	1.30
⅛-in. plates:							
Belgium	6	6	to 6	7	1.36	to	1.37
Germany	6	6	to 6	7	1.36	to	1.37
½-in. ship plates:							
Luxemburg	6	9			1.40		
Belgium	6	9			1.40		

(a) Nominal.

Upper Silesia. Thus the pre-war production in the present national area was some 12,000,000 tons. Present production in this area is about three-quarters of the pre-war. Although the "quotas" of the Steel Syndicate's members total only 14,700,000 tons, the real capacity in the present area is estimated at 17,000,000 tons, or not far short of the pre-war output on a considerably larger territory.

Syndicate Making About Finished

The two latest syndicates are for bars and bands. The process of syndicate forming, begun less than a year ago, is now practically complete. The syndicates are:

Raw Steel Syndicate (*Rohstahlgemeinschaft*), headquarters, Düsseldorf, founded November, 1924, chief function to adapt production to market conditions.

German Steel Syndicate (*Deutsche Stahlgemeinschaft*), founded February, 1925; concerned with the sale of railroad rolling stock materials, wheels, axles, etc. Headquarters, Essen.

Tubes Syndicate, founded March, 1925, headquarters Düsseldorf; embraces all tube manufacturers. Has operated as selling organization since April 1.

"A. Products" Syndicate, founded April 23, for sale of semi-finished steel, structural forms and railroad permanent-way material. To it belong fourteen leading producers, including Krupps, the Stinnes corporations, Haniel, Phoenix, Thyssen, Kloeckner, Hoesch and Rhenish Steelworks. It is a reconstruction of the pre-war syndicate and has total production quotas of 3,700,000 tons a year. The pre-war syndicate had 28 members (including those in since-ceded territory), and a production of 6,300,000 tons.

Thick Sheets Syndicate, founded July, 1925.

Thin Sheets Syndicate (negotiations not yet completed).

German Wire Rods Syndicate, founded July 31 for a term of five years. Fixes prices. Has taken over the Deutsche Drahtwalzwerke of Düsseldorf.

Bars Syndicate (*Stabeisen-Verband*), founded July 30 for a term of five years; represents 75 per cent of manufacturers, and the remainder are expected to join.

Band Iron Syndicate (*Bandeisenvereinigung*), founded Aug. 7; headquarters, Düsseldorf.

Syndicate making is proceeding in other metal industries. The latest formation is an aluminium syndicate, which will adopt the Steel Syndicate's practice of selling material at especially cheap rates to native manufacturers for production of export goods, while keeping up the price for goods designed for home use.

While syndicates are thus multiplying in particular industries, the "concerns," embracing miscellaneous industries, tend to break up. The dissolution of the Stinnes concern is proceeding. The debts of the concern have proved larger than was at first reported. The supporting banks have practically dictatorial power, and it seems that of the gigantic agglomeration nothing but the coal mines, the nucleus of the fusion, will remain to the Stinnes family. As sales of Stinnes stocks so far have realized only 55 million marks, while the debts are now put at 155 millions, the liquidation will have to go much further.

For home iron and steel the delivery terms have been considerably shortened, being for most products about two weeks; for bars, four weeks. Newfoundland ore is again being imported and exceptionally large shipments are coming from Sweden. The Railroads Corporation has further applied the rates of the "exceptional tariff" to iron and steel designed for shipment overseas. The effect is to reduce railroad rates by 7 to 26 per cent, according to district and class of goods. The shipbuilding industry is very dull. The Reichstag has accepted a motion in favor of retention of the clause in the 1902 tariff admitting shipbuilding material duty free.

Certain Districts Are Dull

The German Upper-Silesian iron and steel industry is very dull. Local pig iron output exceeds the demand, although only 7 out of 15 furnaces are in blast; and the market for bars, sheets and other products shows weakness, with low prices. In West and South Germany, Saar competition is complained of. A recent Franco-German agreement admits Saar iron duty free. The Raw Steel Syndicate is therefore negotiating with the Saar ironmasters on the basis that the latter shall limit production to the same extent as Germany (at present 35 per cent), and that they shall charge the same prices as the Raw Steel Syndicate.

In the railroad construction branch a certain improvement has taken place, as result of home and export orders. The machinery branch, also, has improved, and increased interest is shown by foreigners. Hagen, Remscheid and other districts producing small iron goods report dullness. The electro-technical industries are active, owing to the vigor shown in electrification of industry and agriculture and in particular to an increase in municipal orders, which is an outcome of the betterment of local finances. The electric cable works have large home and foreign orders, and are provided with work for nine months ahead. The 1925 consumption of copper, mainly for electrical purposes, is estimated at 320,000 metric tons, as against a pre-war average of 290,000 tons.

The scrap iron market is slightly more active, but prices are lower than a month ago. Steel scrap is quoted at 64 marks per metric ton ($15.50 per gross ton); solid scrap, 61 marks ($14.75); iron and steel turnings, 52 marks ($12.60); blast furnace scrap, 49 marks ($11.85). The prices of semi-finished material have not been changed, but the other Raw Steel Syndicate products have gone up, bars being about 11 marks per ton (0.12c. per lb.) over the lowest prices of July. Prices on Aug. 7 were, per metric ton, with American equivalents:

	Marks		Per Gross Ton
Ingots	105	or	$25.41
Blooms	112½	or	27.22
Billets	120	or	29.04
Slabs	125	or	30.25
			Per Lb.
Bars	135	or	1.46c.
Structural forms	132	or	1.42c.
Universal iron	145	or	1.57c.
Bands	150	or	1.62c.
Thick sheets (over 5 mm.)	145	or	1.57c.
Medium sheets (3 to 5 mm. or No. 11½ to No. 6½ gage)	152	or	1.64c.
Thin sheets (1 to 3 mm.)	170	or	1.84c.
Thin sheets (under 1 mm. or No. 20 gage)	185	or	2.00c.

The new Bands Syndicate has since raised its price to 155 marks (1.67c. per lb.). The Wire Rods Syndicate has not yet fixed any price.

BELGIAN VS. GERMAN

Competition Based in Part on German Export Bounties on Steel

BERLIN, GERMANY, Aug. 7.—Belgium did not participate in the recently concluded agreement under which Germany undertook to admit annually 1,700,000 tons of French, Saar and Luxemburg pig iron, steel and rolling mill products. The president of the Belgian Ougrée-Marihaye Steel Co. has now made Belgium's position clear, by declaring that she considers herself benefited by this agreement on two grounds: first, because less French steel will come upon the world market; secondly, because the Franco-German agreement is the necessary condition of the much-discussed International Steel Syndicate, and France had declared that she could not determine her quota in such a syndicate unless she first knew how much of her steel Germany would take.

The strikes, which began in June in the smelting concerns of Charleroi, developed into a great strike in the Liège machinery and foundry branches, with the result that 111 factories out of 131 stopped, and 68,000 men were without work, including some Brussels strikers. Even before the labor troubles business was very bad, owing to unremunerative prices.

At the beginning of this month Belgian blooms were being sold at £4 11s. 6d. ($22.25); bars, £5 9s. (1.18c. per lb.); and thick sheets, £6 8s. (1.39c.). Although these rates are much lower than German home rates, nevertheless the Rhineland works were actively competing, being helped by the bounty system. In tubes only, Belgians undersold Germans. In wire, as a result of the new German cartel, severe competition is expected. The Belgian Ougrée, Athus, and Boel concerns have formed their own wire syndicate. The output of all three concerns is to be sold by the Société Commercial de Belgique, an appendage of Ougrée.

PRICES LOW IN ALL LINES

Belgian Strike Continues—Costs too High for Prices Obtainable

ANTWERP, BELGIUM, Aug. 7.—The market has certainly not improved. Prices are entirely upset and business is languishing. Transactions are much too limited in number to show a definite tendency of prices; they now depend entirely on the particular position of the maker. The strike goes on; no adjustment has been made. Several meetings have taken place between employers and delegates of the work people, but without favorable results. The last proposals put before the two parties may be summed up as follows:

> Work to be taken up again at latest on Aug. 12. No victims would be allowed, but workmen would be re-engaged only as needed, in all cases within the first week. Reduction of 2½ per cent in wages remains in force. Actual wages are stabilized until end of March, 1926. Allowance of an extra bonus of 10 and 5 centimes per hour during the five winter months. Re-examination of the wage question in March next.

This compromise will be submitted to the National Committee of Metallurgical Workmen at today's meeting. Of course the strikers will, as usual, decide in last resort for themselves, no matter what is agreed to by their mandataries. In all cases, as it is reported, employers are satisfied with the proposed formula. Only a few works of the district of Liège are still working. The strike is not general in this part of the country.

Production has been reduced considerably, but this has not caused an appreciable change of prices. Such demand as exists is far from sufficient and activity is more than limited. Notwithstanding further concessions of prices, makers cannot always book; foreign competition is stronger than ever. On the other hand, the higher foreign exchange has somewhat assisted the Belgian makers. Of course such a situation remains advantageous during only a limited time, for, if high rates last, raw materials would come out dearer.

Steel.—Steel is weak; prices have dropped again, but would have to be reduced still further to meet offers made by buyers. Foreign competition is strong and appears anxious to accept business at such lower prices. The consequences are that the concessions accepted by Belgian makers do not lead to business. Bars are quoted for export at £5 8s., being $26, or 1.16c. per lb., but prices offered by English buyers are as low as £5 5s., equaling $25.50, or 1.14c. For home consumption makers obtain with difficulty such prices as 570 and 575 fr. (1.17c. and 1.18c). Beams also are weak. The new price is £5 4s. (1.13c.) f.o.b. Antwerp, this quotation being, however, susceptible of reduction. A good number of offers for orders from abroad for wire rods are at such low prices that no business with Belgian makers could result; £5 10s. ($26.73) is offered for such material, when the lowest ruling price is certainly not under £5 15s. to £5 18s. ($27.94 to $28.67) f.o.b. Antwerp. Germans, however, have quoted freely as low as £5 12s. 6d. ($27.33). As regular business is absent we give here nominal prices:

					Per Lb.
Bars	£5	8s.	0d.	or $26.00	or 1.16c.
Beams	5	4	0	25.30	1.13
Angles	5	8	0	26.00	1.16
Channels	5	4	0	25.30	1.13
Rods	6	0	0	29.00	1.29
Corrugated bars	6	2	6	29.75	1.33
Steel hoops	7	0	0	34.00	1.52
Cold rolled hoops	11	10	0	57.00	2.55
Wire rods	5	15	0	28.00	...

Sheets.—As thin sheets suffer much from strong foreign competition, prices give slightly. Only a few medium thicknesses show any appearance of activity. The heaviest material is weak, also, German competition remaining as strong as before. In general no important business has developed. Home trade remains small, with about the same prices, expressed in francs. Prices may be stated approximately as follows:

				Per Lb.
Thomas sheets, ⅛ in. and more	£6	10s.	or $31.50	or 1.41c.
Thomas sheets, 1/16 in.	7	2	34.50	1.54
Thomas sheets, 3/32 in.	8	5	40.00	1.79
Thomas sheets, 1/16 in.	8	15	42.60	1.90
Checkered plates	7	0	34.00	1.52

Iron.—Business does not exist. Production is reduced nearly to nothing by the strike. Prices, however, do not therefore increase. The ordinary quality still is quoted at £5 12s. 6d., equaling $27.50.

Blooms, Billets and Slabs.—This market shows movement only among merchants. Belgian makers are not able to book, nor would be disposed to take orders at prices such as are offered from England. Nominal prices are:

Ingots	£3	18s.	or $19.00
Blooms	4	12	22.30
Billets	4	15	23.00
Slabs	5	00	24.30

Last offers from England for billets 2 in. to 4 in. were as low as £4 10s. ($22.25) f.o.b. Antwerp, which means that they are of no interest for the Belgian market.

Pig Iron.—Prices are weak. On account of the strike, local demand has fallen considerably. Makers, notwithstanding the production is not so large, have to look for business for export. Prices obtainable, however, are terribly low so that quotations for phosphorus foundry pig iron went down to 320 fr., f.o.b. Antwerp, i. e., as low as $15 per metric ton. For home trade, prices remained between 325 and 330 fr. Semi-phosphorus foundry costs, according to quality, about $16.25 to $16.50, f.o.b. Antwerp.

BELGIAN PRODUCTION LESS

June Nearly 25 Per Cent Below May, Due to Strike Conditions

Belgium's iron and steel production has fallen sharply as a result of the strike, but pig iron output remains higher than before the war. Average monthly production in 1913 was, in metric tons, pig iron, 207,058; steel, 200,398; finished steel, 154,922. Figures for 1925 are:

	Pig Iron	Steel	Finished Steel
January	249,350	240,070	200,410
February	245,600	233,660	199,310
March	281,560	261,900	219,910
April	267,850	244,910	207,860
May	274,800	246,710	201,490
June	212,700	190,880	152,240

Of 56 blast furnaces in all Belgium, 32 were in blast on July 1, as against 51 on April 1. The decline was entirely in the Hennegau and Brabant districts, where only 4 out of 28 furnaces remained in blast.

STEEL FOR JAPAN

Imports for Seven Years—Proportion from United States

WASHINGTON, Aug. 25.—Based on statistics of the Japanese Imperial Government, the iron and steel division, Department of Commerce, has prepared comprehensive figures showing iron and steel imports by commodities and countries of origin into Japan for the years from 1918 to 1924, inclusive. It is the first time such figures have been presented in this form and affords an interesting study of the foreign trade in iron and steel in Japan. The proportion of imports from the United States declined to 21.8 per cent of the total Japanese receipts of 1,628,316 tons in 1924 from the high mark of 67.6 per cent in 1918, when imports of iron and steel in Japan amounted to 996,029 tons. In 1919 the United States supplied 67.5 per cent of the total of 1,062,133 tons. In 1920 the shipments from this country amounted to 65.3 per cent of the total of 1,411,475 tons, while in 1921 the proportion from this country was 52.8 per cent of the total of 849,131 tons. A decline was shown in 1922 when the United States furnished 41.6 per cent of the total of 1,491,174 tons, and in 1923 the lowest percentage for the United States was registered, being only 15.4 per cent of the total of 1,187,111 tons. The United States led in all of the years except 1923 and 1924, the United Kingdom taking the first rank during these two years with 23.1 and 22.5 per cent, respectively. Germany was third in 1924 with 13.1 per cent.

Exports Constant; Imports Smaller

July Imports Lowest Since November—Slight Improvement in Exports, But Still Below Year's Average

WASHINGTON, Aug. 24.—Making a gain of 1823 gross tons, exports of iron and steel in July of the present year totaled 138,670 tons, as against 136,847 in June. Exports in July, 1924, amounted to 137,481 tons. For the seven months ended with July, 1925, they aggregated 980,957 tons, as against 1,121,340 tons for the corresponding period one year ago.

Imports in July, amounting to 64,642 tons, showed a decline of 17,688 tons under June, when incoming shipments totaled 82,330 tons. The July figure was the lowest since November, 1924. The decrease in July imports was due to the drop in such foreign shipments as pig iron, ferromanganese, scrap, rails and structural shapes. The falling off in these lines, however, was partially offset by heavier incoming shipments of tubular products, which rose to 12,954 tons in July, as against 5301 tons in June and 4208 tons in July.

Imports during the seven months ended with July, 1925, rose to 551,894 tons, as against 319,099 tons during the corresponding period one year ago. The increase was reflected in shipments in a number of products, particularly pig iron, ferromanganese and structural shapes.

Canada continued her lead as the principal purchaser, taking 46,273 tons, or 33.4 per cent of the total exports in July. Twenty per cent of the July shipments to Canada consisted of skelp, while steel bars, plates and shapes each constituted 10 per cent of the exports to that country. China was the second largest

Sources of American Imports of Iron Ore

(In Gross Tons)

	July		Seven Months Ended July	
	1925	1924	1925	1924
Chile	70,000	149,200	563,200	652,000
Cuba	40,600	15,200	338,118	200,190
Spain	27,001	7,550	123,525	32,654
Sweden	22,394	34,883	65,888	125,266
Algeria and Tunis	9,000	13,662	118,995	106,782
Canada	1,497	357	4,871	1,397
Other countries	3,162	2,628	21,978	25,859
	173,654	223,480	1,236,575	1,144,148

Exports of Iron and Steel from the United States

(In Gross Tons)

	July		Seven Months Ended July	
	1925	1924	1925	1924
Pig iron	2,348	1,796	13,551	24,919
Ferromanganese	.....	102	4,080	3,143
Ferrosilicon	.....	.....	.....	708
Scrap	2,687	9,818	45,784	80,379
Pig iron, ferroalloys and scrap	*5,035*	*11,716*	*63,415*	*109,140*
Ingots, blooms, billets, sheet bar, skelp	8,820	9,568	40,103	48,945
Wire rods	1,881	795	14,827	12,571
Semi-finished steel	*10,701*	*10,363*	*54,930*	*61,516*
Iron bars	294	435	3,080	3,731
Steel bars	7,221	6,567	62,997	65,123
Alloy steel bars	224	65	2,528	1,703
Plates, iron and steel	6,000	3,948	59,820	56,640
Sheets, galvanized	10,000	8,052	98,711	59,928
Sheets, black steel	6,902	4,867	44,413	88,505
Sheets, black iron	1,826	907	8,021	6,241
Hoops, bands, strip steel	2,534	2,423	22,320	22,296
Tin plate, terne plate, etc.	10,918	7,817	88,697	106,152
Structural shapes, plain material	6,628	17,900	49,895	64,874
Structural material, fabricated	5,412	5,418	37,813	42,253
Steel rails	20,152	17,619	95,754	121,224
Rail fastenings, switches, frogs, etc	4,037	2,666	20,705	22,834
Boiler tubes, welded pipe and fittings	21,444	15,960	131,077	136,429
Plain wire	2,887	2,056	22,041	26,646
Barbed wire and woven wire fencing	6,108	9,107	43,291	51,383
Wire cloth and screening	210	164	1,025	1,123
Wire rope	492	347	2,818	2,394
Wire nails	971	1,122	5,127	17,392
All other nails and tacks	788	545	5,432	4,427
Horseshoes	62	71	398	612
Bolts, nuts, rivets and washers, except track	1,576	1,598	9,998	9,816
Rolled and finished steel	*116,687*	*109,654*	*815,961*	*911,726*
Cast iron pipe and fittings	2,265	2,332	16,985	16,292
Car wheels and axles	1,390	2,192	12,693	12,402
Iron castings	938	829	5,503	5,310
Steel castings	326	315	3,036	3,910
Forgings	250	80	1,412	1,044
Castings and forgings	*5,169*	*5,748*	*39,629*	*38,958*
All other	1,078	.....	7,022	.....
Total	138,670	137,481	980,957	1,121,340

Exports of Iron and Steel from United States During July, 1925, by Countries of Destination

(In Gross Tons)

Canada	46,273	Dominican Republic	1,242	Kwangtung	368
China	13,134	Panama	1,081	Salvador	349
Cuba	11,129	France	987	Guatemala	322
Mexico	10,559	Norway	733	Nicaragua	311
Japan	8,162	Uruguay	719	Other countries	3,389
Colombia	5,569	Philippine Islands	689	Summary:	
Argentina	4,616	British India	689	North and Central America	59,749
United Kingdom	4,384	British S. Africa	569	South America	21,424
Brazil	4,290	Straits Settlements	528	West Indies	13,517
Dutch East Indies	3,773	Netherl'nds	478	Europe	10,001
Chile	3,505	Honduras	464	Asia	23,115
Venezuela	2,955	Belgium	450	Africa	822
Australia	2,003	Russia in Europe	392	Oceania	10,042
Italy	1,764	Dutch West Indies	387		
Peru	1,701				

Imports of Iron and Steel into the United States

(In Gross Tons)

	July		Seven Months Ended July	
	1925	1924	1925	1924
Pig iron	24,881	13,511	255,047	127,587
*Ferromanganese	2,903	892	44,528	20,609
Ferrosilicon	698	543	3,607	7,869
Scrap	4,147	1,038	54,415	30,693
Pig iron, ferroalloys and scrap	*32,629*	*15,984*	*357,597*	*186,758*
Steel ingots, blooms, billets and slabs	700	1,195	18,457	23,172
Wire rods	227	146	4,632	4,730
Semi-finished steel	*927*	*1,341*	*23,089*	*27,902*
Rails and splice bars	3,318	2,272	27,326	23,141
Structural shapes	6,533	4,977	52,904	23,441
Boiler and other plates	117	75	234	2,671
Sheets and saw plates	181	83	2,270	1,378
Steel bars	6,605	.....	34,913	.....
Bar iron	271	583	8,125	2,916
Tubular products	12,954	4,208	37,488	35,253
Nails and screws	222	30	849	274
Tin plate	36	56	198	906
Bolts, nuts, rivets and washers	2	4	52	102
Round iron and steel wire	308	314	2,228	2,282
Flat wire and strip steel	184	122	1,262	1,333
Wire rope and insulated wire, all kinds	166	190	1,482	8,958
Rolled and finished steel	*30,897*	*12,914*	*169,331*	*102,655*
Castings and forgings	189	171	1,877	1,784
Total	64,642	30,410	551,894	319,099
*Manganese ore	28,586	12,287	115,611	182,199
Iron ore	173,654	223,480	1,236,575	1,144,148
Magnesite	2,469	2,237	47,519	47,120

*Manganese content only, except shipments of manganese ore from Cuba, which are free of duty and are reported in gross tons of material.

consumer of July exports, taking 13,134 tons, or 9.5 per cent of the total. Of the shipments to China, 75 per cent consisted of rails and 10 per cent of tin plate.

With a total of 11,129 tons, or 8 per cent of the July movement, Cuba reached third among the countries of export. Of the shipments to Cuba, 30 per cent were rails and accessories, while 10 per cent each were galvanized sheets and shapes. Mexico, taking 10,559 tons, or 7.6 per cent of the July exports, ranked fourth. Of the shipments to Mexico, 15 per cent consisted of casing and oil line pipe and 12 per cent consisted of welded pipe, while 10 per cent was galvanized sheets. Black steel sheets, tin plate, shapes, barbed wire and car wheels each constituted 5 per cent, while rails and accessories amounted to 8 per cent.

Japan dropped to fifth place as a country of export in July, taking 8162 tons, or 5.9 per cent of the total for the month. Of the shipments to Japan, tin plate amounted to 25 per cent and rails and accessories to 15 per cent, while scrap, wire rods, black steel sheets and black pipe each constituted 10 per cent.

Pig iron was the leading product in the import list in July, incoming shipments amounting to 24,881 tons, of which 15,354 tons came from India, 6078 tons from the United Kingdom, 1593 tons from the Netherlands and 1100 tons from Germany. Philadelphia was the principal port of entry of pig iron imports in July, shipments through that port amounting to 12,369 tons, of which 7121 tons came from India and 5248 tons from the United Kingdom. Boston was the second largest port of entry for pig iron in July, shipments amounting to 4015 tons, all of which came from India.

Of the total imports of 12,954 tons of tubular products in July, 9213 tons consisted of cast iron pipe. Of the cast iron pipe imports, 435 tons came from Belgium, all through the port of Los Angeles. France was the principal source of cast iron pipe imports in July, shipments from that country having amounted to 8474 tons, of which 4115 tons came through the port of New York, 1895 tons through the Michigan district and 1672 tons through the port of Los Angeles.

Steel bar imports in July totaled 6605 tons, of which 5061 tons came from Belgium. Of the Belgian imports, 3086 tons came through the port of Baltimore, 596 tons from the port of New Orleans, 537 tons through Oregon ports, 518 tons through the port of San Francisco and 266 tons through the port of Washington. Structural shape imports in July totaled 6533 tons, of which 5887 tons came from Belgium. Of the shipments, 2300 tons were entered through the port of Galveston, while 572 tons were entered at New York, 432 tons at Philadelphia and 283 tons at Boston. Of the rail imports amounting to 3318 tons in July, 2968 tons came from Belgium, and of these shipments 1347 tons were entered through the Michigan district and 1236 tons through Oregon ports.

Imports of Iron and Steel in Gross Tons
(By Months and Monthly Averages)

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
January, 1924	26,675	10,587	3,033	23,081
February	42,269	15,482	4,847	4,430
March	39,278	16,919	3,941	46,067
April	50,969	17,171	7,371	29,729
May	66,801	25,220	5,501	31,993
June	60,569	28,697	2,347	24,726
July	30,410	13,511	1,435	12,287
August	44,928	16,189	1,120	16,160
September	45,214	16,347	3,578	6,269
October	40,873	10,963	8,608	12,088
November	35,707	9,880	7,596	19,919
December	69,281	28,143	10,530	28,305
Twelve months' average	46,370	17,426	4,992	21,672
January, 1925	77,058	41,344	7,165	15,498
February	92,373	47,803	10,997	9,666
March	92,106	50,803	5,691	24,330
April	71,249	33,299	7,699	14,941
May	68,117	21,260	8,721	29,139
June	82,330	35,657	4,259	20,720
Twelve months' average	62,449	27,099	6,440	15,578
July	64,642	24,881	3,601	28,586
Seven months' average	78,842	36,435	6,876	16,516

*Not included in "total imports." These figures are for manganese contents of the ore.

Exports of Iron and Steel in Gross Tons

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914	2,406,218	221,582	145,720
*Average, 1915 to 1918	5,295,333	438,462	1,468,020
*Average, 1919 to 1923	3,078,724	123,837	149,218
January, 1924	247,942	3,812	8,594
February	164,820	4,773	11,463
March	123,618	4,047	2,278
April	131,276	4,117	8,275
May	154,136	4,317	4,895
June	163,770	2,057	11,178
Fiscal year 1924	2,009,343	40,596	119,744
July	137,481	1,796	10,363
August	134,628	4,365	6,127
September	135,979	4,799	15,473
October	157,071	3,373	15,569
November	123,577	1,478	8,649
December	128,865	2,549	7,081
Calendar year 1924	1,792,421	41,478	114,417
January, 1925	140,802	1,298	5,764
February	101,665	1,413	7,516
March	154,178	2,037	7,951
April	154,426	1,632	6,831
May	150,612	2,316	7,360
June	136,847	2,507	7,804
Fiscal year 1925	1,647,024	29,563	107,988
July	138,670	2,348	10,701
Seven months	980,957	13,551	54,930

*Calendar years.

Canada's Output Down Sharply in July

According to the report issued by the Dominion Bureau of Statistics the production of pig iron in Canada for the month of July was but 20,946 gross tons, or 54 per cent below the output of 45,883 tons produced in June, and the lowest tonnage reported for any month since the establishment of monthly records by the bureau in 1917. Most of the loss in the July output was in basic pig iron made for the further use of reporting firms, this grade falling to 73 tons, as compared with 38,679 tons in June. Of the total production of pig iron during July 99.4 per cent was made for sale. Two furnaces were in blast at the end of the month, one at Sault Ste. Marie, Ont., and one at Hamilton, Ont.

The production of steel ingots and castings in July reflected the lowered output of pig iron by dropping to 22,471 tons, or a decline of 40,669 tons from the output of the previous month. The recession from June's output was general in all grades, with the single exception of Bessemer steel castings, in which there was a slight rise to 149 tons.

British Exports and Imports in July

WASHINGTON, Aug. 25.—Exports of iron and steel from Great Britain in July increased to 306,605 gross tons, as compared with 275,652 gross tons in June, while imports increased to 213,001 tons, as against 201,716 tons, according to a cablegram received by the Department of Commerce from Acting Commercial Attaché Mowatt M. Mitchell, London.

Tin Ores from Bolivia

WASHINGTON, Aug. 25.—Growth of the tin mining industry in Bolivia, the most important in that country, is apparent from statistics of exports of tin ore, which increased from 3682 tons of concentrates in 1897 to 52,478 tons in 1924, according to a report just printed by the Bureau of Foreign and Domestic Commerce. It has been prepared as a result of studies made by Rollo S. Smith of the Latin-American Division and Commercial Attaché Ralph H. Ackerman, Santiago, Chile. The progressive increase in exports of Bolivian tin concentrates is shown by figures for the intervening years. In 1900 the movement had increased to 16,000 tons, in 1908 to 32,000 tons and in 1914 to 36,594 tons.

A 128-ft. ferry boat for the automobile trade is to be built at its River Rouge yards by the Great Lakes Engineering Works, Detroit, for the Walkerville & Detroit Ferry Co.

Business Cycle Resumes Upward Swing

Preponderance of Favorable Factors Indicates Improvement in Volume of Trade During Remainder of Year

Favorable Factors

1. *The P-V Line (the ratio of commodity prices to physical volume of trade) moves up decidedly.*
2. *Commodity prices continue to advance, with better adjustment between farm and manufactured goods.*
3. *Outlook for farm purchasing power improves.*
4. *Retail trade gains.*
5. *Railroad tonnage shows an upturn.*
6. *Building activity increases.*
7. *New business enterprises multiply, while failures decrease.*

Unfavorable Factors

1. *Unfilled orders small.*
2. *Signs of extended speculation in stocks and real estate.*
3. *Foreign competition still active.*
4. *Overcapacity in many industries.*
5. *Bank debits decrease.*

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

AS usual the stock market is telling the industrial story. Industrial stocks have attained record levels and each day new highs are made. The continued advance in stocks is based on low money rates and an improved outlook for industries. Usually the stock market runs ahead too fast and possibly is doing so at present, under the influence of easy credit and manipulative operations by pools. In part, however, the advance is justified by the outlook for better business.

It is now clear that the business recession which took place between February and June was minor in character, which means that it has been a mere interruption in a general upswing which began about a year ago. This minor reaction served to correct overproduction and the resultant accumulation of stocks in first hands.

While this correction has not been drastic it has aided important readjustment, such as industrial consolidations, adaptations to the hand-to-mouth buying practice, some wage reductions, liquidation through failures of weak concerns, and new financing on favorable terms. During this period, also, two great uncertainties have been cleared up in part at least, namely, the crop situation and the outlook for money. On the latter point it is now apparent that no sharp advances are likely, and the stabilization of foreign currencies on a gold basis is assured.

Upswing Now Under Way

A GLANCE at Fig. 1 will show that business in the mid-summer of 1925 is at a high level—that railroad tonnage is gaining, and that the volume of bank checks drawn, though declining, is higher than at any time in 1923 or 1924. It is further apparent that the upswing now beginning starts from a high level.

The question arises, where are we in the business cycle? Or, perhaps, some may ask, what has become of the business cycle? The answer which seems most reasonable is that a complete business cycle was consummated between the middle of 1921 and the middle of 1924, the peak occurring in the spring of 1923. Following the middle of 1924 there began another major upswing in the nature of a new business cycle. This upswing was interrupted about February this year by a minor recession which lasted through June. The major advance is now being resumed and will carry through into 1926.

So much depends nowadays on the control exercised through the Federal Reserve System that it is more difficult to predict the extent and duration of business cycles than it was in earlier days. The brakes

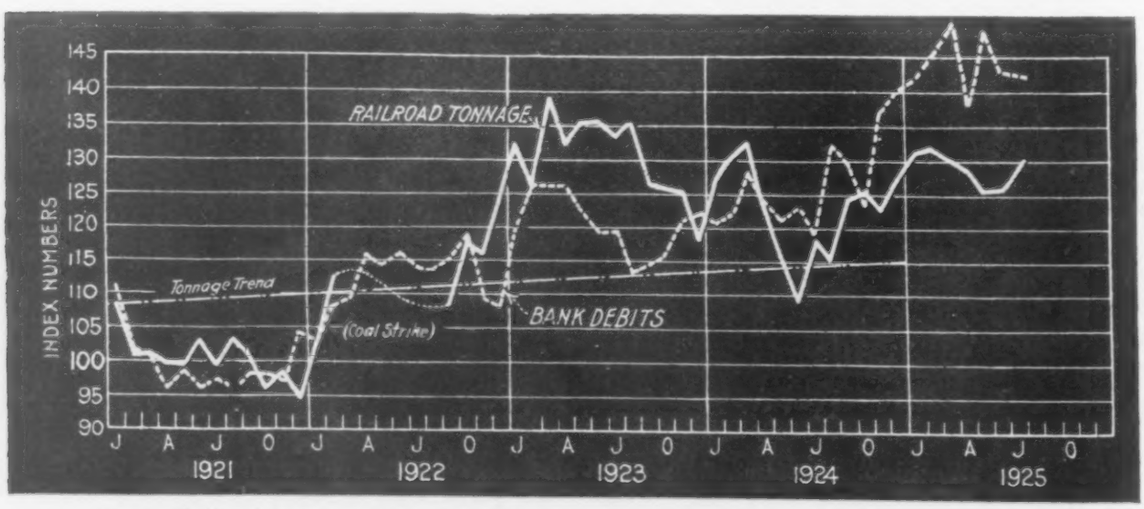

Fig. 1—Railroad Tonnage Curve Turns Up; Commodity Movement Large for This Time of Year

In This Issue

Major advance in business cycle again resumed. — Upswing which was interrupted in February should carry through into 1926; favorable factors predominate.—Page 552.

Hand-to-mouth buying has released money for speculation. — Will subsequent overproduction with subsequent slow movement of goods cause money to be taken from speculative or investment securities?—Page 556.

Modern cost system permits speeding production by premium wage plan.—Foundry workers credited with 50 to 60 per cent of time saved from normal task period. Simple system keeps tabs on 40,000 patterns and all work moves on time schedule at Bucyrus Co. plant.—Page 527.

Question of steel capacity depends upon current price.—Idle units can not be assumed to be part of "capacity" when they could not operate profitably at going price. —Page 558.

Bonus plans applied to individual workers often prove too complicated in practice. —But group incentive plans provide stimulant without accompanying complexities.—Page 534.

Steel demand from railroads has had profound effect on industry in hundred years.—Heavier loads, higher speeds, longer hauls have aided in development of steel mill design and practice; new conditions calling for economical operation will also have effect on steel.—Page 557.

Bureau of Standards metallurgical equipment could be utilized to larger extent.— Providing steel industry would support larger personnel for solution of research problem. Wide range of work now under way.—Page 536.

July iron and steel imports drop nearly 18,000 tons from June.—Reach lowest point since last November; exports above year ago. —Page 550.

Canadian pig iron output drops 54 per cent in month.—July output of 21,000 tons lowest since records began in 1917.—Page 551.

British imports nearly doubled, exports off 17 per cent in last two years.—High coal and transportation costs make return to prewar prosperity unlikely.—Page 556.

New inwall cooling system plates stop movement of stock along blast furnace shell. —Individual water-cooled plates supported by shell form series of shelves said to prevent wall erosion.—Page 530.

Experimental blast furnace on Cuyuna Range manganiferous ore blown out.—Manganese content, of 134 tons of metal made, runs to 15 per cent.—Page 531.

Customer often responsible for delays in bolt delivery.—Lack of specific information in regard to "special" specifications hampers maker.—Page 532.

Hundred-foot barges entirely built from steel channels.—Great rigidity and unusual deadweight carrying capacity claimed as result.—Page 533.

Passenger car production to date 10 per cent over last year.—Truck output shows an even larger gain over 1924.—Page 560.

Sir Arthur Balfour suggests agreement to avoid international competition.—By restricting activities to countries under seller's political influence; but doubts practicability. —Page 561.

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August 27, 1925

The Iron Age and Its Readers

THE first nine numbers of Vol. 116 of THE IRON AGE—the volume that began with the issue of July 2, 1925—cover a period commonly regarded as an off season in the reading of business and technical literature. Moreover, with vacation absences the order, both in publication offices and in the thousands of offices to which business papers go, not so much is expected of midsummer issues as of those which come out in the months of intensive production in every line of industry.

It is especially gratifying to the Editors of THE IRON AGE, therefore, to receive the expressions that have come to this office concerning various articles that have appeared in the past nine weeks. We are free to say that unusual effort was put forth to make these July and August issues interesting and valuable, and there has been no hoarding of matter against the homecoming of summer absentees. To have such appreciation of the paper in months ordinarily called dull is the best spur to the making of new records in the months just ahead.

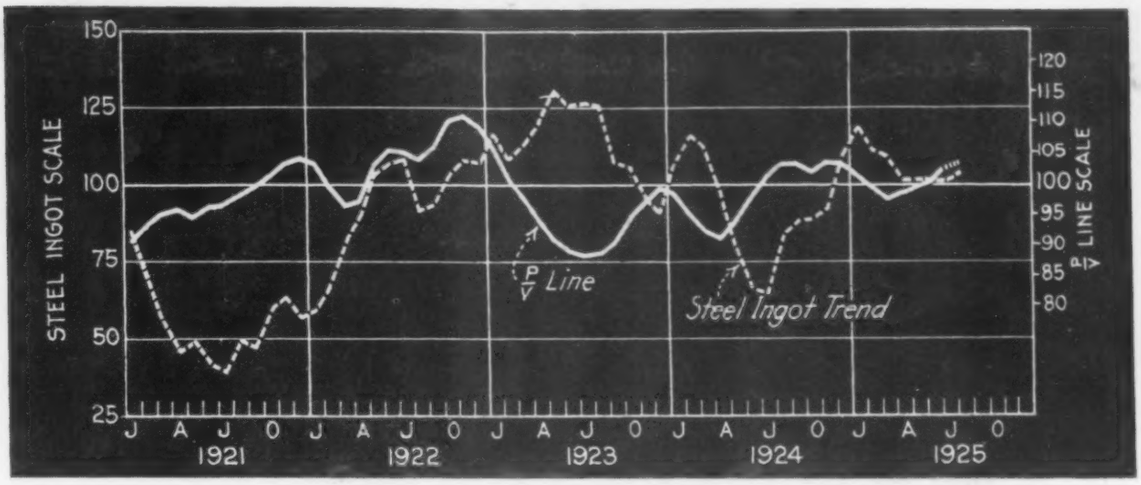

Fig. 2—Steel Ingot Production Turns Upward as P-V Line Continues Rise

are put on promptly when credit becomes unduly extended. Already some signs of inflation in bank credit and speculative excesses are developing. If these go much further pressure will probably be exercised by the Federal Reserve System, through its control of credit by open market operations and by changes in the discount rate. If such control is applied promptly there will be no great boom, and it seems probable that this will be the case.

Indeed, a check would probably be administered very soon but for the desire to keep interest rates low in this country in order to facilitate operations looking toward the establishment of sound monetary conditions abroad.

P-V Line and Steel Output

THE P-V Line, which is the ratio of commodity prices to physical volume of trade, moved strongly upward in June and July. This line anticipates the trend of general business by from four to six months. It follows that a general improvement is to be expected during the remainder of 1925.

In the past the P-V Line has forecast the trend of steel ingot production with great accuracy and the present is apparently no exception. The P-V Line turned down in December, 1924, and the ingot output dropped two months later. The P-V Line turned up in April this year, and the adjusted ingot curve advanced in July—three months later. (The curve showing the trend of steel ingots is adjusted for seasonal variation, and, as the decline in July was less than usual, the curve rises.)

Further gains in ingot output are forecast during the next few months.

Steel Barometers Rise

BOTH of the sensitive steel barometers shown in Fig. 3 were clearly higher in July. They give a definite forecast of increased production and firm prices. Probably iron and steel markets will advance before long.

The monthly average price of scrap, based on the market for heavy melting steel scrap at Pittsburgh, is headed upward and the latest quotations indicate a recovery of half the loss since the beginning of the year. The rate of change in the unfilled orders of the United States Steel Corporation indicates not only that the bottom has been reached, but that an increase is probably near.

Building Volume Still Encouraging

BOTH interest rates and building activity increased in July (see Fig. 4).

The interest rate on the best commercial paper in the New York market averaged 3.88 per cent in June and 4.03 per cent in July. Even after adjustment for seasonal variation the index was higher. Further advances in money rates are probable as commodity prices rise and business expands.

As usual, low money rates last winter stimulated real estate speculation and building activity. The curve of building activity, based on the square feet of floor space in contracts awarded as reported by the F. W. Dodge Co., reached a peak for the year in July. Actually there was an increase in contracts awarded in spite of the fact that July usually shows a decrease.

(*Concluded on page* 583)

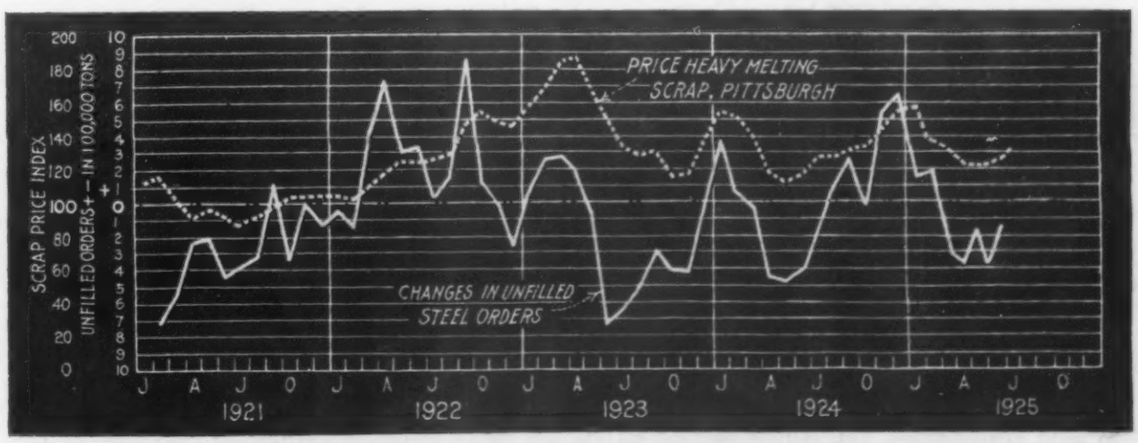

Fig. 3—Unfilled Order Situation Improving; Scrap Prices Hint of Firmer Steel Market

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Commodity Stocks and Speculation

VARIOUS upward movements in the stock market in the past 10 months have led to much thought as to the causes thereof. Most observers have not felt fully satisfied with the explanations available. A common remark has been that the strength of the stock market seems to be discounting greater earnings in future than seem likely to be made, for it is the general view that such large profits as often have been seen in the past are not necessarily a prospect for the discernible future.

Then there has been the explanation that the total income is very large, well in excess of current needs, and the money has to be invested because there is nothing else to do with it, even if earnings prospects have not increased greatly.

Another suggestion may be made, which merits more consideration. That is, that conditions have so changed that manufacturers, distributors and consumers do not need to carry nearly so large stocks of commodities as they used to carry. Manufacture and transportation are conducted smoothly and the price fluctuating tendency has decreased greatly. There is less occasion to hold or accumulate commodities for a rise, and a much better alinement between production and consumption.

This change would necessarily release funds, and the funds would be invested in securities or used to speculate in securities. That this has occurred, and on a considerable scale, cannot be doubted. The only question is how large has been the scale, this being followed by the question whether security values are made more or less stable by the change.

May not the reverse process occur in future? No one is likely to look for a period in which people will accumulate stocks of commodities speculatively, i.e., for a rise, but it is quite possible that circumstances might require producers to hold commodities, not selling so fast as expected, thereby causing them to dispose of securities.

Akin to this inquiry, which really would be a search for untoward possibilities at a time when the business barometer as read by the old rules shows fair weather ahead for a long period, there may well be more inquiry as to foreign securities held in the United States. The statistics have shown that in this year or that year the United States has "taken" foreign securities to various amounts. According to a Department of Commerce study, in 1924 we "invested abroad $573,000,000 more than we received from foreign investors" in purchases, maturities, etc., and at the end of the year "our total foreign holdings, excluding debts owed to our Government, amount to about $9,000,000,000, having increased by about $1,000,000,000 during the year."

There is nothing like complete or adequate information as to where these foreign securities actually are. The statistics show simply the amount that the United States "took." Are they digested, digestible but undigested, or what? They represent a kind of investment that the individual personally can know little about and therefore takes on faith, which faith may change.

Britain's Steel Trade Problems

WITH imports the largest since the war and with exports the smallest since 1922, the foreign iron and steel trade of Great Britain falls far short of recovering its pre-war status. Statistics on other pages show that imports have nearly doubled and that exports have declined 17 per cent in the last two years. Compared with 1913, imports to July 1 this year have expanded about 25 per cent while exports have declined an equal amount.

Severe Continental competition has been the main cause of the present unsatisfactory conditions. The industry has not held its own either at home or abroad. Profits have been meager and in many instances production has gone on at a loss to avoid the greater losses of suspended operations. As it is, many blast furnaces and steel

plants are either closed or working at reduced rates. Such conditions, however, cannot continue indefinitely.

The whole situation in British industry is fraught with danger. So far as steel works labor is concerned there has been no great problem except as the general burden of unemployment doles has pressed heavily. Workers have endured sacrifices and have been in the main loyal. But labor demands in coal and transportation have been such that mounting costs have all but produced an impasse. The proposed subsidies and tariffs might bring temporary relief, but they cannot be seriously thought of as cures. Lower cost, the one way out, is effectually barred.

Steel and the Railroad Century

ENGLAND is celebrating the one-hundredth anniversary of the steam railroad. On Sept. 27, 1825, a 34-car freight train was hauled over the Stockton & Darlington Railway at 10 to 15 miles an hour. This first train was driven by the constructor of both the railroad and the engine—George Stephenson. The event was re-enacted recently. An ancient engine, "Puffing Billy," hauled some open coaches over the same roadbed, while a signalman galloped ahead to warn passers-by to clear the track.

In these hundred years the railroads and the steel industry have grown side by side into modern giants. It would be hard to determine whether it is improved metallurgy that has made possible the enormous betterment in permanent way and rolling stock, or whether abundant and cheap transportation is responsible for the demand for steel, not only by the railroads but by manufacturers. Without steel, no railroads. On the other hand, without railroads, no steel-consuming industries.

Undoubtedly the steel industry owes much to the roads. As most outstanding, consider the rails. Originally they were beech timbers dropped into deep ruts; next these planks were sheathed with iron. But this light iron buckled and curled under the rolling wheels, and the short cast iron fish-bellied rail replaced lt. Further developments were always associated with some marked improvement in steel mill practice. Long rails of wrought iron were possible after Birkenshaw's patented rolling mill was developed. Steel rails came with Bessemer's discovery.

Much of the modern rolling mill, with its extensive mechanical equipment, was developed to produce the rails for the 100,000 miles of new American lines built between 1880 and 1900. Increasing loads demanded a better and better steel, and greater and greater uniformity—this as much as anything else is responsible for close attention to chemical composition of materials from ore to finished product and also for the rise of the open-hearth process in the United States. Thus in meeting the railroad man's demands the steel man has developed basic open-hearth steel, made to close chemical and physical specifications and rolled in heavy sections in mills of almost human dexterity and super-human precision.

Similar advances in almost every branch of metallurgy have also gone hand in hand with the evolution in rolling stock. Stephenson's "Rocket" of 1829 contained the essential features of a modern locomotive. But consider the differences in boiler plate and tubes required to increase the heating surface from 140 sq. ft. to 6100 sq. ft. (as in a Mallet engine), or the change in frames to support a 4¼-ton engine, 12 ft. long, and another weighing 180 tons, 80 ft. long. The draft gear for hauling a train of 90 tons may be made of almost anything; only the best material will stand the tugging and bumping of a 4000-ton train. The axles and wheels needed for wheel loads of 11 tons are entirely different from those for 2 tons.

The contrasts might be multiplied. A brief survey of the changes in a short hundred years is sufficient to demonstrate that the railroads have marched ahead with the steel industry. Proponents of newer alloy and electric steels sometimes call the railroad men ultra conservative; but on the whole this charge is unfair. The roads are constantly looking for better materials; they are hardly to be blamed for wishing these improvements to be made on their own familiar specifications. In fact, this demand has had a wholesome effect on the industry. The record shows it is responsible for tonnage materials of remarkable uniformity; steel and iron which withstand the utmost abuse, not only in service but in the repair shop.

May the next hundred years continue the development in the same creditable way.

Breaking Shop Monotony

WHEN the nature of a task is such that an industrial worker develops "a monotonous pessimistic reverie," the employer should find some means of breaking the reverie, else production will lag and labor turnover will be high. Dr. Elton Mayo, research worker under the Rockefeller Foundation at the Wharton School of the University of Pennsylvania, arrived at this conclusion after an exhaustive study in the spinning department of a textile mill. Parallel cases are found in the metal industries. In factories where production of parts is on a scale so great as to keep operatives constantly at the same task the effect upon some types of men and women may prove demoralizing, as has been demonstrated.

Unchanging routine, where the worker gazes steadily at an identical shape and material in the constantly recurring cycle of operation, may prove intolerable, or result in a bovine intellectual condition which prevents high production. This is particularly noticeable in work calling for little muscular effort, where it is a case of sitting or standing hour after hour, with little or no change in position, muscles and mind alike working like automatons. Dr. Mayo's panacea is the rest period with supervised relaxation.

In the spinning room in which the tests were made it had been necessary to hire 100 workers

each year to keep forty employed. Walking up and down the long alleys Dr. Mayo found the mule spinners developing the "monotonous pessimistic revery" which intensified the strain of watching the machine for broken threads. Although the pay was generous and the opportunity for bonus performance always open, the employees had a habit of leaving suddenly and without explanation. Dr. Mayo introduced several 10-minute rest periods in the morning and again in the afternoon, and instructed the workers as to the best methods of relaxation during the periods of rest.

The results were striking, as set forth in the report. Labor turnover became normal, production was maintained and morale improved. A conclusive test of the value of the occasional rests came with their abandonment temporarily in the effort of the management to increase production in a subsequent rush period, thinking that by using extra time production would be increased. Very soon the old habits returned and production instead of increasing fell off, even though employees and machinery were working more hours each week. On the resumption of the rest periods production increased, turnover ceased again and morale came back.

Many firms have tried out the rest period. Some approved it, and the experiment has come to be a part of their works routine. They believe they get better results. Others have not found it profitable and have abandoned it. Much depends upon the kind of employment. Probably no one would think of introducing a rest period in the ordinary machine shop. Probably, too, where the system could be used to advantage much depends upon the individual who guides it. One can imagine a rest period in the middle of a half day being made demoralizing rather than beneficial. Many manufacturers find it difficult to imagine, where machinery is involved, that it would pay to shut it down at all. Yet there is little doubt that when the successful operation of a machine requires coordination with the skill of a human being, the physical and mental condition of the operator may cut an important figure in speed of performance and excellence of product.

Costs and Productive Capacity

IN the common thought of the iron and steel trade the abstract fact that there is a wide range in production cost is not applied concretely to market conditions prevailing at different times. At a given price certain units can produce at a profit, others cannot.

The principle has been recognized more frequently in respect to merchant blast furnaces than to steel mills, since the actual blowing in and blowing out of furnaces have furnished the examples. Given a certain price for pig iron, somewhere in the neighborhood of the average cost, certain furnaces would be able to make a profit, while certain other furnaces would lose. Labor rates and raw material prices not changing, the number of furnaces in each category would vary as the price varied. As prices advanced more furnaces would be able to operate. As they declined furnaces would have to blow out. The reasoning, of course, must be broad and ignore special cases where a furnace may operate at a loss for some particular purpose or refrain from operating when a profit seems attainable.

Thought has been given to this matter for many years by attempts to answer the question, "What is our pig iron producing capacity?" As to merchant furnace production, the logical rejoinder for many years has been, "It depends on the price." In a broad or rough way it might be said that the practical capacity at any given time is the capacity actually in blast. The object of a furnace being to make money, and production being a requisite in the process, why does not the idle furnace operate if it can? One cannot conceive of the price of pig iron being high enough to bring into operation all the stacks in existence, for, before production got up to the theoretical limit, made by the mere existence of furnace stacks, raw materials would grow scarce and high priced. Blast furnace labor, simply as such, might not grow scarce, but the industrial activity involved in creating such a demand for pig iron would make a scarcity of labor as a whole.

The general principle applies more or less to steel making and steel finishing, but in much more complicated form. There are some steel companies whose lowest unit cost lies in full operation. There are others whose lowest unit cost lies at less than 100 per cent operation.

In all plants the principle applies that forcing production up to a certain point decreases unit cost and forcing it beyond that point increases cost. There were glaring instances of the latter in the year 1920. Managers who thought they knew each moment what their plants were doing were treated to successive monthly surprises when their cost sheets were completed. Also there are cost variations among different plants of the same company.

To determine what is the practical, effective capacity would involve first a division of all existing equipment into two classes, that which is obsolete and that which is not obsolete. But in the case of each piece of equipment the inquiry would have to be made, What is the cost of available labor and supplies and what is the selling price obtainable? The case is complicated if the cost of construction has increased. Other things being equal, a piece of equipment may be obsolete if it can be replaced by something better at a certain price, and not obsolete if the new thing costs more.

When steel prices are low, therefore, a very considerable part of the visible physical equipment is not a part of the existing capacity, from the practical or market standpoint. The steel buyer cannot go to any idle unit and put it in operation by giving it an order, for it might not be able to fill the order at the prevailing price without loss. Should the market rise, the unit might become commercially available.

PHILADELPHIA SURVEY

Department of Commerce and Federal Reserve Bank Analyze Its Marketing Area

WASHINGTON, Aug. 25.—An interesting report on a commercial survey of the Philadelphia marketing area has just been issued by the Division of Domestic Commerce, of the Bureau of Foreign and Domestic Commerce, and is the first of a series of regional market surveys undertaken by the division. The Philadelphia survey was made by J. Frederic Dewhurst, chief of the statistical division of the Federal Reserve Bank, Philadelphia, who was given assistance by Dr. Joseph H. Willits, assistant professor of industry, Wharton School of Finance and Commerce, and Paul C. Olsen.

The plan is to analyze the purchasing power of the trade territory dependent upon one of the major cities, which Director Julius Klein of the Bureau of Foreign and Domestic Commerce says in introducing the report, is without question dominant in its distribution area. Dr. Klein states that it is hoped that the information will be helpful in enabling sales executives to set quotas and to plan sales campaigns on a basis of knowledge rather than on guesses and that it will thus be of some consequence in aiding to eliminate wastes "in our present system of distribution."

In the Philadelphia survey the marketing area is considered as closely approximating the third Federal Reserve District which embraces all of Pennsylvania from a point as far west as Johnstown, and in addition takes in Delaware and the southern half of New Jersey.

Metal Working Industries Important

In commenting upon the survey of metals and metal products the report says:

"In the aggregate, the varied industries of this group, comprising iron and steel works, shipbuilding, foundries, railroad car construction and repair, and the fabrication of machinery and automobiles, represent a very important share of the manufacturing activity of the third Federal Reserve District. The production of primary iron and steel products; that is, the output of steel works and blast furnaces total more than $460,000,000 annually. These primary industries are of negligible importance in Philadelphia. The bulk of their output is found in the central manufacturing and farming area, in the counties of Northampton, Lehigh, Berks, Lebanon, and Dauphin, and in the western part of the district in Cambria County. Bethlehem, Chester, Harrisburg, and Johnstown are the most important iron and steel cities. These industries, which give employment to nearly 70,000 workers in the district, purchase in excess of $294,000,000 worth of materials annually.

"During the war the Delaware earned the name of the 'American Clyde,' for that river from Trenton to Wilmington was the scene of greatest shipbuilding activity during that period. Since 1919, . . . however, many of the shipyards have been dismantled, and operations in the others have declined to a small fraction of the rate prevailing in that year. Many of the yards still in existence are now being used in the manufacture of marine and other machinery and railroad cars and equipment. The present importance of the industry is probably not more than a quarter of what it was during the war years.

Nearly 1000 Foundries and Machine Shops

"Foundries and machine shops form a large group of nearly a thousand small-scale establishments, employing some 43,000 workers and with an annual production of $185,000,000. Naturally, these plants, which directly supply other industries, are found distributed in all of the important industrial cities of the district. Localization in Philadelphia, however, is rather pronounced, the establishments in this city, which are largely jobbing foundries, accounting for more than 40 per cent of the district's total production. The other important centers—Johnstown, Reading, Lancaster, Wilmington, Camden, Trenton, and Allentown—produce nearly 30 per cent of the remaining output. These establishments consume large quantities of local pig iron and scrap, as well as molding sand, coke, and various other materials and equipment. Purchases of supplies by the foundries and machine shops in the district amount to more than $80,000,000 annually.

"This district is also an important center for the manufacture and repair of steam and electric railway cars and equipment. The largest locomotive factory in the United States and one of the largest manufacturers of electric street cars and equipment are located in Philadelphia, and several important railroad car repair shops operate within the district. In one of the larger cities of the district, Altoona, the railroad repair shops are the only important industry, giving employment to nearly all of the city's industrial workers. All these establishments are heavy purchasers of a great variety of products, including pig and scrap iron, steel bars, plates, billets, rivets, bolts, etc., machine tools and other machinery, as well as lumber, paint, glass, electric wire and fittings, sand, gravel, limestone and coal, coke and other fuels. The railroad repair shops and car construction companies alone purchase more than $120,000,000 worth of supplies and equipment annually; and, of course, the employees of these concerns, numbering nearly 70,000, are an important consumer buying group.

"Besides these more important metal manufacturing groups there are a number of smaller industries in the district which include the manufacture of automobiles, engines, machine tools, textile and other machinery, electrical apparatus and machinery, bolts, nuts, rivets, etc., and a multitude of miscellaneous metal products. These manufacturers are, of course, important purchasers of the supplies and equipment used in such operations."

Georgian Manganese Co. Will Operate Russian Ore Concession

Manganese ore properties in the Georgian district of Russia will be operated by the Georgian Manganese Co., Ltd., 39 Broadway, New York. The company will carry out the contract entered into by W. A. Harriman & Co., New York, and the Russian Soviet Republic. An account of the negotiations, which allow the leasing interest mining privileges for 20 years, will be found in THE IRON AGE of June 18, page 1799.

The Georgian Manganese Co. recently was incorporated with $9,000,000 capital stock. Its officers are: W. A. Harriman, chairman; C. L. Holman, president; J. S. Elliott, vice-president; M. B. Rascovich, vice-president; E. Eckardt, secretary-treasurer, and R. Schellens, assistant treasurer.

Secretary Eckardt says that arrangements have been made with the Russian operators of the leased property to deliver to the Georgian company 600,000 tons of ore at the rate of 30,000 tons a month. About 150,000 tons of this will go to England and about 200,000 tons to France and Germany. When this arrangement terminates, the leasing interests will take over operations. In the meantime, engineers will be at work surveying possibilities for future operations. About $4,000,000 will be spent in equipment. Mr. Eckardt said it is unlikely that the company ever will attempt to reduce the ore there.

Steel furniture shipments in July, as announced by the Department of Commerce, amounted to $1,809,174, compared with $1,805,599 in June and with larger amounts each month since November. Orders received in July were $1,841,138; unfilled orders, July 31, $1,464,793. Steel shelving shipments in July amounted to $302,698, much the lowest for many months. Unfilled orders, at $186,283, represent only one-third of a month's normal shipments.

The General Abrasive Co., Niagara Falls, N. Y., is putting up a three-story steel frame and tile building 40 x 100 ft., to cost $100,000 with equipment, to provide additional facilities for crushing, concentrating and grading electric furnace abrasives.

Pittsburgh Steel and Steel Products Merger Effective

Approval was given at a special meeting of the stockholders of the Pittsburgh Steel Co. at the company's general offices, Pittsburgh, on Aug. 20, to an increase in the capital stock of the company of $20,000,000, consisting of 200,000 shares of common stock of $100 par value, and to an issue of $2,500,000 of 6 per cent 5-year gold notes. As announced in THE IRON AGE, June 18, 1925, page 1772, the notes and part of the new common stock were to be used in the acquisition of the capital stock of the Pittsburgh Steel Products Co. The latter company was organized in 1909 as successor to the Seamless Tube Co. of America. Controlling interests in both companies were the same. Holders of the stock of the Products company receive in exchange for their stock $500,000 in cash, the $2,500,000 of notes and 76,000 shares of the new common stock.

The financial structure of the Pittsburgh Steel Co. is made up of $10,500,000 of 7 per cent cumulative preferred stock, $39,500,000 of common stock and the $2,500,000 of 6 per cent gold notes, which will be paid off at the rate of $500,000 a year. The Pittsburgh Steel Products Co. was capitalized for $10,000,000, of which $6,000,000 was outstanding and last February, partly to finance a new seamless tube mill capable of producing sizes of 6 in. to 12 in., the company issued $3,000,000 of first mortgage 6 per cent sinking fund gold bonds to mature Feb. 1, 1937.

Under the new arrangement, the Pittsburgh Steel Products Co. does not lose either its name nor identity, but will be operated as a subsidiary of the Pittsburgh Steel Co. There will be some consolidations of departments effective Sept. 1, such as the purchasing, traffic and accounting departments. The general offices of the companies will be on the seventh floor of the Union Trust Building, Pittsburgh.

The personnel of the parent company is David P. Bennett, president; Emil Winter, Edward H. Bindley and C. E. Beeson, vice-presidents; H. J. Miller, secretary; Clayton Snyder, treasurer; W. K. Given, auditor; John F. Hazen, general manager of sales; that of the Products company is Emil Winter, president; Edward H. Bindley, vice-president; W. C. Reitz, secretary and treasurer; Bindley Reitz, auditor, and Richard R. Harris, general manager of sales.

The Pittsburgh Steel Co. has the distinction of being the largest independent producer of wire and wire products in the country and the Pittsburgh Steel Products Co., with the completion of its new unit at Allenport, Pa., a German mill, capable of producing 6 to 12 in. pipe, will be the largest producer of seamless tubular goods in the country, with a monthly capacity of 17,000 tons.

Phoenix Plant to Be Electrified

After more than a century of continued production by hand, water and steam power, the Phoenix Iron Co., Phoenixville, Pa., will change entirely to electrical operation.

A contract for equipment costing in excess of $250,000 for the electrification of the 36-in. blooming mill has been awarded the Westinghouse Electric & Mfg. Co. and includes the main mill motor, the flywheel set and auxiliaries, weighing more than 500,000 lb. The new apparatus will increase the electrical equipment of the plant by 4350 hp., and is an addition to the Westinghouse drives for the 22-in. and 24-in. structural mills installed last year. The blooming mill is capable of rolling 12,000-lb. ingots into blooms or structural blanks of an average weight of 180 lb. per ft. at the rate of 30,000 tons per month, charged weight. A 3500-hp. Westinghouse reversing mill motor with the range of 1 to 120 r.p.m. will be required for the operation of this mill. This motor weighs 300,000 lb., is 19 ft. long by a height and a width of 17 ft. Electric current for the operation of this motor will be produced by a 3000-kw. generator driven by a 2500-hp. motor, coupled with a 60,000-lb. flywheel. When running at full speed the flywheel is releasing stored power to the extent of 1000 hp., thus bringing the total up to the same as required for operating the mill motor at full capacity.

Auxiliaries required for the mill drive, in addition to the main motor, include eight motors and two blowers of air washers, each of a capacity of 30,000 cu. ft. per minute, while separately the contract calls for the delivery of three extra motors of a total of 850 hp. for the operation of water pumps.

Inland Steel Co. Authorizes Additional Improvements

The Inland Steel Co., Chicago, has authorized additional improvements at its Indiana Harbor, Ind., works, entailing the expenditure of several million dollars. Included are 77 by-product coke ovens to be built by the Koppers Co., Pittsburgh, an addition to the company's power station in its No. 2 plant and the motorization of all the steam-driven units in its No. 1 plant, embracing a plate mill, a 24-in. structural mill, a continuous merchant mill, and an 18-in. sheet mill. The contracts for the motors and accessory equipment have not yet been placed but will probably be divided among leading builders.

The Inland company started the construction of a fourth blast furnace early in the year and present progress indicates that the stack will be ready for service by Jan. 1.

Automobile Production Continues High

Production of motor vehicles in July is reported by the Department of Commerce at 397,094, of which 357,883 were passenger cars and 39,211 were trucks. This is a slight reduction from the April, May and June figures. Otherwise, however, it is the highest in about two years. For the seven months elapsed, passenger cars to the number of 2,294,583 have been produced, an increase of nearly 10 per cent on the 2,096,681 of last year. In trucks the percentage gain has been still higher (21), the figures having been 276,027 this year and 228,815 last year.

Distribution of Lake and Foreign Iron Ores

The distribution of Lake Superior, Eastern and foreign ores during 1924 is shown in a series of charts issued by the Lake Superior Iron Ore Association, Cleveland. One shows water shipments of Lake Superior ores to the various ports as well as the all rail shipments. Another shows the distribution of ore from Lake Erie ports to the various consuming districts. A chart covering the distribution of foreign ore indicates that, of the total importations of slightly over 2,000,000 tons, 750,000 tons was received at New York, 400,000 tons at Philadelphia for eastern Pennsylvania furnaces, 900,000 tons at Sparrows Point, Md., and 6000 tons at Charleston, S. C. Complete tonnage distribution from the Eastern mines was not available but the ore produced from these mines as reported by the U. S. Geological Survey was 1,303,679 tons, of which 303,386 tons was mined in New York, 807,411 tons in Pennsylvania, 101,123 tons in New Jersey and 91,759 tons in Virginia. The larger shipments of Lake ore to the East, all to eastern Pennsylvania furnaces, were 100,000 tons each to Philadelphia, Harrisburg and Bethlehem; 50,000 tons to Emporium, 30,000 tons to Reading and 70,000 tons to Dubois.

Mineral output of Alaska for 1924 is reported by the United States Geological Survey at $17,457,333, compared with $20,330,643 in 1923. In both years copper accounted for more than half the total, with gold in second position. The aggregate since 1880 is given as $535,484,276, or more than 70 times the price, $7,200,000, which the United States paid to Russia for the territory.

World Wide Steel Demand Lower Than It Should Be

Coordinated international effort for development of the uses of iron and steel is impracticable in the opinion of Sir Arthur Balfour, steel manufacturer of Sheffield, England, who is now in the United States. Speaking before the International Chamber of Commerce meeting at Brussels Sir Arthur said:

"It is generally admitted that the iron and steel industry is in a far from satisfactory condition and there can be no doubt that the productive capacity of the world is in excess of the actual demand. This demand is lower than it should be and I am inclined to the belief that the chief reason is that the principal consuming countries of the world, e.g., Middle Europe, Roumania and Bulgaria, the Near East, Russia and China, lack political stability and conditions do not exist either for their development or for the extension of credit to these markets, with a view to their expansion.

"We as an international chamber are bound to inquire into the causes of and if possible find a remedy for adverse influences which are operating against full employment of the world's productive capacity, and so we are entitled to ask ourselves whether collaboration between countries on an international basis is economically possible, having regard to the domestic position of each of the producing countries in regard to the employment of its own labor and productive resources.

"Will the world's industry benefit most by a coordinated international policy for the development of the uses of iron and steel in those countries which could absorb it? If so, could this international cooperation take the line that the different producing countries should concentrate on the development of markets in which they are politically supreme?

"We are all familiar with the important groupings which have taken place of late years in almost every country, and it being confidently asserted that if proprietors can amalgamate their interests, arrange for the segregation of orders and concentrate them into those areas and those works most suitable for their production, industry in general will benefit; specialization is the order of the day and we must adopt it.

"These are questions, as I said before, which we as an international chamber, are entitled to inquire into, but I personally am dubious whether such action on an international basis could ever be practicable. The obstacles in the way are innumerable, and furthermore any action which would decrease the capacity for individual initiative is not to be desired. However, the subject is a wide one and you may be disposed seriously to debate it."

Where Steel Exports Went in July

Canada Took 193,042 Tons of Nine Leading Items in Seven Months—Japan Fourth with 41,440 Tons, Following Cuba, 45,859 Tons, and Argentina, 44,674 Tons

Exports from United States, by Countries of Destination

(In Gross Tons)

	Steel Plates				Galvanized Sheets				Black Steel Sheets			
	July		Seven Months Ended July		July		Seven Months Ended July		July		Seven Months Ended July	
	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924
Totals	6,000	3,948	59,820	56,640	10,000	8,052	98,711	59,928	6,903	4,867	44,413	88,505
Canada	4,923	2,796	45,352	45,547	1,880	963	15,990	11,511	3,567	1,579	24,903	24,044
Japan	....	....	879	183	56	1,929	2,065	10,007	1,468	2,228	13,194	58,595
Cuba	70	89	368	743	1,209	1,024	5,815	5,278	84	77	561	557
Philippine Islands	36	336	149	917	1,247	857	11,389	8,965	8	345	105	552
Mexico	203	81	849	469	1,058	845	4,773	3,182	....	....	....	....
Argentina	....	....	....	....	558	176	32,719	3,935	48	159	347	910
Chile	....	....	....	....	3	38	1,464	744	....	....	....	....
Colombia	....	....	....	....	415	446	3,251	1,924	....	....	....	....
Central America	....	....	....	....	....	211	....	2,580	....	....	....	....

	Steel Rails				Barbed Wire				Plain and Galvanized Wire			
	July		Seven Months Ended July		July		Seven Months Ended July		July		Seven Months Ended July	
	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924
Totals	20,152	17,619	95,754	121,224	6,108	9,107	43,291	51,383	2,887	2,056	22,041	26,646
Canada	3,433	2,852	11,478	13,224	142	50	1,283	599	1,007	732	9,021	5,978
Japan	1,269	....	3,955	30,369	....	....	....	....	33	18	433	3,770
Cuba	1,151	8,444	24,445	22,788	544	633	3,019	4,592	155	185	1,545	1,176
Philippine Islands	733	405	2,215	2,910	369	....	773	....	....	....	....	....
Mexico	198	273	3,891	7,325	614	700	3,923	2,100	515	422	2,270	2,128
Argentina	....	....	....	....	259	134	5,600	5,709	300	19	487	3,270
Chile	635	....	4,350	6,889	....	....	....	....	25	18	103	194
Colombia	479	1,149	891	6,021	379	650	2,864	3,903	....	....	....	....
Brazil	150	2,616	2,528	8,146	1,721	4,557	10,617	17,464	292	105	1,468	2,418
Honduras	189	271	1,182	2,627	....	....	....	....	....	....	....	....
Kwan Tung	....	....	....	10,985	....	....	....	....	....	....	....	....
Australia	....	....	....	....	33	282	713	1,795	....	....	....	....
British S. Africa	....	....	....	....	380	609	3,499	3,472	....	....	....	....
Great Britain	....	....	....	....	....	....	....	....	....	143	....	1,159

	Tin Plate				Plain Heavy Structural Steel				Steel Bars			
	July		Seven Months Ended July		July		Seven Months Ended July		July		Seven Months Ended July	
	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924	1925	1924
Totals	10,918	7,817	88,697	106,152	6,628	17,900	49,895	64,874	7,221	6,567	62,997	65,123
Canada	2,790	1,507	20,421	14,510	4,176	....	30,054	....	4,142	....	34,540	....
Japan	2,141	3,163	19,162	23,574	52	....	950	....	164	....	802	....
Cuba	247	261	3,000	3,158	688	....	3,976	....	605	....	3,130	....
Mexico	596	235	3,528	2,255	....	....	....	....	....	....	....	....
Argentina	479	646	5,521	6,467	....	....	....	....	....	....	....	....
Chile	934	32	3,171	1,466	114	....	1,293	....	....	....	....	....
China	1,391	131	7,053	22,934	....	....	....	....	....	....	....	....
British India	....	245	....	9,059	....	....	....	....	....	....	....	....
Hong Kong	....	45	....	6,151	....	....	....	....	....	....	....	....
Italy	589	451	4,828	3,695	....	....	....	....	....	....	....	....

Completing Extensive Improvements to Trumbull Plant

YOUNGSTOWN, Aug. 25.—At its plant in Warren, the Trumbull Steel Co. is bringing to completion a two-year program of expansion and improvement in mechanical installations, involving a total outlay of some $10,000,000. Not only has its productive capacity been enlarged, but operating costs have been materially reduced. The principal single installation is in a steam power house, supplying power for the sheet and tin mills. This plant includes a pulverized coal station and two batteries of four new boilers each.

Upon the completion of its current program, the capacity of the company for producing highly finished steel products will be increased from 45,000 tons per month to 60,000 tons. In addition the open-hearth steel-making facilities are being expanded. Steel is now being received for the building to house an eighth open-hearth furnace, while foundations have been partly built for a ninth open-hearth. Operating its finishing mills at a normal rate, the Trumbull company is now obliged to purchase on the market part of its semi-finished steel.

Good Results with Coke Oven Gas

Operating officials state the use of by-product coke oven gas is not nearly so hard on the furnaces as producer gas, inasmuch as they do not require relining nearly so frequently. With the use of producer gas, it is claimed the furnaces must be virtually rebuilt after 200 to 250 heats, whereas 350 heats are possible with coke oven gas before rebuilding. It is not necessary to replace the furnace bottoms so frequently, it is also claimed. One furnace on coke oven gas recently made 349 heats before rebuilding was necessary.

The company has enlarged its cold strip steel department, and now has 61 mill stands against 48 at the beginning of this year and 24 stands two years ago. In the hot strip department, the 16-in. mill has been changed to an 18-in. unit, three stands of rolls added together with a third heating furnace, another hot bed added and the mill layout rearranged. These alterations have increased the capacity of this mill from a previous high of 7200 tons per month to 11,000 tons, and enable it to roll strip 22 in. wide of lighter gage than formerly. This form of strip steel is popular in the manufacture of automobile fenders. The finishing part of the 14-in. hot strip mill has been increased 10 per cent in capacity by rearrangement.

Talk of Mid-West Steel Consolidation

Buying in rather liberal volume the past three weeks of common stock of the Trumbull Steel Co. by Cleveland investors has given rise to renewal of reports that the Warren, Ohio, producer may form the nucleus for a mid-west independent steel company consolidation. Bankers identified with the Union Trust Co., Cleveland, are reported keeping in close touch with developments in the independent industry, and have set up a proposed amalgamation.

Malleable Casting Output Lower in July

WASHINGTON, Aug. 25.—Based on reports from 142 plants, of which four were idle, production of malleable castings in July totaled 57,229 net tons, according to the Bureau of Census. Shipments were 54,863 tons, while orders booked aggregated 56,933 tons, with a monthly capacity of 114,144 tons for these plants. The capacity operated in July was 50.2 per cent. The July figures for production and shipments were slightly under those for June while orders booked in July were greater than they were in June. Reports from 143 plants in June, including five which were idle, showed that production amounted to 58,881 tons and shipments 58,473 tons, while orders booked dropped to 47,303 tons. The capacity operated in June was 51.5 per cent.

For 130 identical plants, of which one was idle, production in July was 53,450 tons; shipments 51,384 tons and orders booked 52,916 tons. The capacity engaged was 50.1 per cent of the total of 106,784 tons. Reports from these same plants showed that production in June when two were reported idle totaled 55,143 tons; shipments 54,510 tons and orders booked 44,026 tons. The operations in June were 51.6 per cent of the monthly capacity of 106,924 tons.

Brazilian Exports of Manganese Decrease in 1924

There was a sharp decline in shipments of manganese from Brazil during 1924, the total exportation amounting to only 159,229 tons, Assistant Trade Commissioner Richard C. Long, Rio de Janeiro, reports to the Department of Commerce. The minimum annual exportation from 1919 to 1923 inclusive was 205,725 tons, and during 1923 the exports totaled 235,831 tons. This decrease has taken place in the face of a rising market.

The largest share of the 1924 exports—114,208 tons—went to the United States; of the remainder 20,301 tons went to Belgium, 16,900 tons to England, 7,200 tons to the Netherlands, 600 tons to France and 21 tons to Germany. Three Brazilian ports took care of these shipments, 152,100 tons going from Rio de Janeiro, 7108 tons from Bahia and 21 tons from Santos.

Buys Empire Rolling Mill Co.

Final negotiations in the sale of the Empire Rolling Mill Co., Cleveland, operating six sheet mills, to A. W. Wheatley, Lima, Ohio, investment banker and president Delphos Mfg. Co., Delphos, Ohio, were concluded Aug. 22. The plant was appraised at $1,000,000 and the sale price was somewhat below that amount. The former owners took $300,000 in bonds and were paid the remainder in cash. The name of the company will be changed to the Empire Steel Co. Mr. Wheatley is president of the new company.

Blast Furnace at Los Angeles Regarded Unlikely

LOS ANGELES, CAL., Aug. 25.—Rumors of the proposal to establish a coke blast furnace in or near Los Angeles by Eastern capitalists are discounted by local steel men, who declare that such a project would be impractical. Original plans of the Pacific Coast Steel Co. included the erection of such a blast furnace in connection with its proposed new plant at Long Beach, Cal., but it is understood that these plans have been dropped, due to the lack of coal deposits in southern California.

Automatic Control for Boiler Plant of Joliet Works

The Smoot system of regulation is to be applied to the boiler plant of the Joliet Works of the Illinois Steel Co. It comprehends an automatic arrangement for maintaining constant steam pressure under varying loads, by providing the proper stoker speed for the load and the corresponding proper volume of air passed through the boiler, as well as the proper pressure in the combustion chamber and the proper speed of the forced draft fan. The plant includes six 1000-hp. boilers equipped with double Coxe stokers burning coke breeze. The regulating equipment will be supplied by the Smoot Engineering Co., New York, and besides the master control for the steam pressure, each boiler is independently controlled. Thus there will be six regulators for the stoker speeds, six for the air volume and six for the combustion chamber pressure.

FABRICATED STEEL

Awards of Week Total 30,000 Tons, While New Projects Reach About Same Figure

The remarkable mid-summer activity in structural steel work has continued during the past week, awards totaling about 30,000 tons, with new projects also close to 30,000 tons. A loft building in New York with 5500 tons, New York subway work of 4200 tons and an exposition building in Philadelphia, 3500 tons, were the largest awards. Among the projects pending are several ranging from 2000 to 4000 tons. Gas holders in California call for 4000 tons, and two bridges in Chicago 5500 tons. A Chicago office building requires 3000 tons. Awards include the following:

Frank & Frank, loft building, Eighth Avenue and Thirty-sixth Street, New York, 5500 tons, to Taylor-Fichter Steel Construction Co.

Apartment building, Madison Avenue and Seventy-sixth Street, New York, 1200 tons, to Easton Structural Steel Co.

Apartment building, East Seventy-second Street, New York, 650 tons, to Easton Structural Steel Co.

Theater, Worcester, Mass., 350 tons, to an unnamed erector.

Standard Oil Co. of New Jersey, specialty packing plant, Bayonne, N. J., 1300 tons, to McClintic-Marshall Co.

New York subways, St. Nicholas Avenue section, 4200 tons, to American Bridge Co.

Pennsylvania Railroad, bridge in Philadelphia, 650 tons, to Fort Pitt Bridge Co.

Aeolian Hall, Fifth Avenue, New York, 1600 tons, to McClintic-Marshall Co.

Loft building, Seventh Avenue and Fortieth Street, New York, 900 tons, to Levering & Garrigues Co.

Loft building, 10-14 West Thirty-seventh Street, New York, 700 tons, to Hay Foundry & Iron Works.

N. Y., N. H. & H. R. R. bridge, Waterbury, Conn., 125 tons, to McClintic-Marshall Co.

Dormitory, Cambridge, Mass., 335 tons, to New England Structural Co.

A. O. Smith Corporation, Milwaukee, plant addition, 1300 tons, to Milwaukee Bridge Co.

Dance pavilion, Lawrence and Winthrop Avenues, Chicago, 518 tons, to Lakeside Bridge & Steel Co.

National Theaters Corporation, Avalon Theater, Chicago, 772 tons, to Vanderkloot Steel Works.

Wilson Creek bridge, Menomonie, Wis., 114 tons, to American Bridge Co.

Two gas holders for erection in the East, 600 tons, to Stacey Mfg. Co.

Car ferry, Wabash Railway, 3500 tons, to Manitowoc Ship Building Co.

Plant addition, Grasselli Chemical Co., East Chicago, Ind., 350 tons, to McClintic-Marshall Co.

Knights of Columbus, Louisville, Ky., 200 tons, to the Louisville Bridge & Iron Co.

U. S. Foil Co., Louisville, Ky., 175 tons, to the Louisville Bridge & Iron Co.

Theater and office building, Santa Ana, Cal., 125 tons, to Union Iron Works.

Theater, Cathay Center, Los Angeles, Cal., 140 tons, to Llewellyn Iron Works.

Hotel, Del Monte, Cal., 100 tons, to California Steel Co.

Oregon-Oriental Steamship Co., Portland, Ore., 300 tons of plates, to Albina Marine Iron Works.

Certain-teed Products Corporation, Philadelphia, factory building, 540 tons, to McClintic-Marshall Co.

Car shops in Central America, placed through Baldwin Locomotive Works, 550 tons, to McClintic-Marshall Co.

Sesqui-Centennial Exposition, Philadelphia, Building No. 2, 3500 tons, to the Austin Co.

Two highway bridges, Lucastown, Ohio, 250 tons, to American Bridge Co.

Structural Projects Pending

School, New Bedford, Mass., 200 tons.

Warehouse addition, Salada Tea Co., Boston, 500 tons.

Loft building, Eighth Avenue and Thirty-ninth Street, New York, 2000 tons.

Office building, 119 West Fifty-seventh Street, New York, 600 tons.

Apartment hotel, 34-40 West Seventy-second Street, New York, 900 tons.

Mutual Trust Co., building in Philadelphia, 800 tons.

Hendrik Hudson Hotel, Troy, N. Y., 100 tons.

Standard Oil Co. of New Jersey, building at Bayonne, N. J., 100 tons.

Pennsylvania Railroad, bridge at Camden, N. J., 500 tons.

Duquesne Light & Power Co., power plant near Pittsburgh, 800 tons.

Highway bridge, Williamsport, Pa., 250 tons.

Theater, Bronxville, N. Y., 200 tons.

Adams Street bridge, Chicago, 2500 tons.

South Park board, outer drive bridge in Grant Park, Chicago, 3000 tons.

Gas holders, Oakland, Cal., 4000 tons.

Gas holders, Long Island, N. Y., 1500 tons.

Government wharf and sheds, New Orleans, 1200 tons.

Sugar plant, East Grand Forks, Minn., 700 tons.

Office building, Chicago, 3000 tons.

Two bridges, Milwaukee Electric Railway & Light Co., Milwaukee, 400 tons.

Florida East Coast, coach shop, St. Augustine, Fla., 700 tons.

Chesapeake & Ohio Railroad, boiler shops at Huntington, W. Va., 900 tons; general contract to Joseph Nelson & Sons.

Calaveras Cement Co., San Andreas, Cal., 800 tons.

Apartment, Clay and Powell Streets, San Francisco, 150 tons.

Laboratory building, Stanford University, Palo Alto, Cal., 300 tons.

Municipal Auditorium, Sacramento, Cal., 400 tons.

Bridge over Mormon Channel, Washington Street, Stockton, Cal., 186 tons.

Pan-American Petroleum & Transport Co., Los Angeles, plates for tank work at San Pedro, Cal., 100 tons.

Central Y. M. C. A., Philadelphia, addition, 200 tons.

School of Nurses, St. Joseph's Hospital, Philadelphia, 500 tons.

St. Charles Hotel, Atlantic City, N. J., addition, 300 tons.

Senior High School, Philadelphia, 700 tons.

Office building, Fifteenth and Locust Streets, Philadelphia, 700 tons.

Office building, Thirteenth and Chestnut Streets, Philadelphia, 250 tons.

RAILROAD EQUIPMENT

New York Central Inquires for 1000 Steel Cars —15 Locomotives for South Africa

Aside from the inquiry of the New York Central for 1000 70-ton steel gondolas, there is no important pending business in cars. This road's inquiry for 75 locomotives has not been acted upon. The South African Railways have placed 15 locomotives with the Baldwin plant. The principal items follow:

The New York Central is inquiring for 1000 70-ton gondola cars.

The South African Railways have ordered 15 locomotives from the Baldwin Locomotive Works, and are in the market for 75 fruit cars.

The Lehigh & New England Railroad has asked for revised bids on the rebuilding of freight cars, specifying 300 instead of 600 as in the former inquiry.

The Chicago & Northwestern Railroad is asking for bids on the rebuilding of 25 baggage cars.

July Fabricated Steel Plate Orders Down

Bookings of fabricated steel plate in July totaled 29,207 net tons, according to reports received by the Bureau of the Census from 35 firms representing 43 per cent of capacity that month. Of the July bookings, data for one concern being estimated, 6381 tons were for oil storage tanks, 2205 tons for refinery materials and equipment, 3766 tons for tank cars, 2254 tons for gas holders, 602 tons for blast furnaces, and 13,999 tons for stacks and miscellaneous purposes. The July bookings were 5195 tons under those for June, when they totaled 34,402 tons, based on reports from firms representing 51 per cent of capacity. For the seven months ended with July, bookings aggregated 184,085 tons, as against 152,514 tons for the corresponding period of last year and 388,000 tons for the corresponding period of 1923.

Steel barrels produced in July are reported by the Department of Commerce at 497,152. Shipments were 506,894. Unfilled orders at the end of the month aggregated 1,109,383. Production and shipments were the lowest since February. Production in July of last year, however, was much lower, having been 398,397, with shipments at 407,258 barrels.

Iron and Steel Markets

ACTIVE BUYING OF BARS

Pittsburgh and Chicago Districts Show Important Increase

Agricultural Prosperity a Factor—Further Gain in Operations

Buying of rolled steel products, particularly bars, shows further gain in the territory of largest consumption, bounded by Pittsburgh, Detroit, Chicago and Cincinnati. Some Pittsburgh mills go back to November to find a week of equal bookings, while the largest producer at Chicago took 70 per cent more bar business in the first three weeks of August than in the like period in July.

At the same time there has been no like increase in orders for plates and shapes, which are commonly classed with bars as the heavy tonnage products. Farm implement and tractor manufacturers have led in the bar movement. Both industries are now more active than at any time since 1920, implement works operating at 70 per cent and upward.

Agricultural prosperity is reflected also in a better demand for wire products. Contracting by jobbers is under way in the South and is spreading northward. From 50 per cent, at which it has stood for several months, wire mill output is now averaging 60 per cent of capacity.

Two Duquesne blast furnaces of the Carnegie Steel Co. will be started up, one this week and the other next week, in view of a further increase in the company's output of steel ingots. Youngstown district steel companies have made a small gain in steel production also.

The freer buying of bars in the Central West has developed more variation in prices than has existed in several months, the 1.90c. Pittsburgh price, as reported last week, applying on larger orders, while at the same time 2c., Pittsburgh, was paid on the smaller tonnages, which numerically have been of more consequence than usual.

An inquiry from the New York Central for 1000 gondolas following one for 1000 cars from the Illinois Central gives some encouragement to car builders, who point to the long dearth of such orders as a strong reason for expecting a good business in the next four months.

Among new structural steel projects totaling 30,000 tons were 5500 tons for a New York loft building, 4200 tons for New York subway work and 3500 tons for a Philadelphia exposition building. Two bridges in Chicago, up for bids, call for a total of 5500 tons, a Chicago office building for 3000 tons, and gas holders to be erected in California for 4000 tons.

Producers of sheet bars assert the maintenance of the $35 mill price that has ruled since the latter part of May, though a northern Ohio sale was reported as on a $33.50 Youngstown basis. A recent transaction in slabs was at $32, maker's mill.

Indications as to the market trend in pig iron are inconclusive. In northern Ohio sales of 50,000 tons by two leading producers have been followed by the quoting of a 50c. advance in territory along the Ohio-Indiana line. Other districts are quiet, though more inquiry has come up at New York, and at Chicago merchant furnaces have sold more iron in August than in July.

With Sept. 1 close at hand, the coke market is without change in the week, though one Eastern blast furnace company has paid $3.50 for fourth quarter coke and another $3.75. The prospect of an advance, in the event of an anthracite strike, is bringing a good many ovens in line for production. There is no excitement in the soft coal market, in view of a weekly output of 10 million tons, with the large body of union miners idle.

Prophecies of an increasing inflow of European steel products to the United States have not come true. Imports of rolled and finished steel in July were 30,897 tons, of which about two-fifths was cast iron pipe, listed under "tubular products." The net tonnage, about 19,000, was only one-sixth as great as that exported during the same month. Total iron and steel imports, at 64,642 tons, showed a 22 per cent drop from the June figure and were the lowest since November. Total exports, at 138,670 tons, were almost the same as in June and the same as in July, 1924.

One of the largest machinery orders since the war has been placed by the Hudson Motor Car Co., Detroit, with the E. W. Bliss Co., Brooklyn, involving an outlay of over $1,000,000 for 350 metal presses of various types.

Neither of the composite prices of THE IRON AGE showed change this week, pig iron remaining at $19.04, compared with $19.46 one year ago, and finished steel at 2.396c. per lb., compared with 2.510c. one year ago.

Pittsburgh

Steel Business Gaining in Volume and Diversified—Output Pointing Upward

PITTSBURGH, Aug. 25.—Steel business still is gaining in volume, and in some instances it has been necessary for steel manufacturers to go back to last November to find bookings comparable in size with those of the past week. While it is probable that the peak of tin plate business has been reached and the next few weeks will see a subsidence of demand, the past week has brought out a notable increase in the demand for wire products, which finds its chief explanation in agricultural prosperity. The same cause is operative in larger demands for the various forms of steel used by the agricultural implement industry.

Meanwhile the break in oil prices and the unsettled market in gasoline appear to have had no effect either upon drilling operations or the demand for oil country tubular goods. Comparatively heavy home and building construction for the time of year is helping the movement of standard pipe. That particular branch

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Aug. 25, 1925	Aug. 18, 1925	July 28, 1925	Aug. 26, 1924
No. 2X, Philadelphia‡	$21.76	$21.76	$21.26	$21.76
No. 2, Valley furnace†	18.50	18.50	18.50	19.50
No. 2, Southern, Cin'ti†	22.55	22.55	22.55	21.55
No. 2, Birmingham, Ala.†	18.00	18.00	18.00	17.50
No. 2 foundry, Ch'go furn.*	20.50	20.50	20.50	20.50
Basic, del'd, eastern Pa.	20.50	20.50	21.50	20.00
Basic, Valley furnace	18.00	18.00	18.00	19.00
Valley Bessemer del. P'gh	20.76	20.76	20.76	21.76
Malleable, Chicago furn.*	20.50	20.50	20.50	20.50
Malleable, Valley	18.50	18.50	18.50	19.50
Gray forge, Pittsburgh	19.76	19.76	19.76	20.76
L. S. charcoal, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	115.00	115.00	115.00	90.00

Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	35.00	35.00	35.00	37.00
O.-h. billets, Pittsburgh	35.00	35.00	35.00	37.00
O.-h. sheet bars, P'gh	35.00	35.00	35.00	37.50
Forging billets, base, P'gh	40.00	40.00	40.00	42.00
O.-h. billets, Phila.	40.30	40.30	40.30	42.17
Wire rods, Pittsburgh	45.00	45.00	45.00	46.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	2.00
Light rails at mill	1.60	1.60	1.60	1.85

Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	*2.12*	2.17	2.22	2.32
Iron bars, Chicago	1.90	1.90	1.90	2.15
Steel bars, Pittsburgh	1.90	1.90	2.00	2.10
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, New York	2.24	2.24	2.34	2.44
Tank plates, Pittsburgh	1.80	1.80	1.90	1.90
Tank plates, Chicago	2.10	2.10	2.10	2.15
Tank plates, New York	2.14	2.14	2.14	2.09
Beams, Pittsburgh	1.90	1.90	2.00	2.00
Beams, Chicago	2.10	2.10	2.10	2.15
Beams, New York	2.24	2.24	2.14	2.34
Steel hoops, Pittsburgh	2.40	2.40	2.40	2.60

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Aug. 25, 1925	Aug. 18, 1925	July 28, 1925	Aug. 26, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.15	3.15	3.15	3.50
Sheets, black, No. 28, Chicago dist. mill	3.30	3.30	3.30	...
Sheets, galv., No. 28, P'gh	4.20	4.20	4.20	4.60
Sheets, galv., No. 28, Chicago dist. mill	4.35	4.35	4.30	...
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.65
Sheets, blue, 9 & 10, Chicago dist. mill	2.40	2.40	2.40	...
Wire nails, Pittsburgh	2.65	2.65	2.65	2.80
Wire nails, Chicago dist. mill	2.70	2.70	2.70	...
Plain wire, Pittsburgh	2.50	2.50	2.50	2.55
Plain wire, Chicago dist. mill	2.55	2.55	2.55	...
Barbed wire, galv., P'gh	3.35	3.35	3.35	3.50
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	...
Tin plate, 100 lb. box, P'gh	$5.50	$5.50	$5.50	$5.50

Old Material, Per Gross Ton:				
Carwheels, Chicago	$17.50	$17.50	$17.50	$17.50
Carwheels, Philadelphia	18.50	18.50	18.00	18.00
Heavy steel scrap, P'gh	19.00	19.00	18.50	17.50
Heavy steel scrap, Phila.	16.50	16.50	16.00	17.00
Heavy steel scrap, Ch'go	16.75	16.50	16.00	15.50
No. 1 cast, Pittsburgh	17.50	17.50	17.00	18.00
No. 1 cast, Philadelphia	18.00	18.00	18.00	18.50
No. 1 cast, Ch'go (net ton)	18.00	17.50	17.50	17.50
No. 1 RR. wrot., Phila.	17.50	17.50	17.50	19.00
No. 1 RR. wrot. Ch'go (net)	16.75	16.25	14.50	14.00

Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$3.25	$3.20	$2.90	$3.00
Foundry coke, prompt	4.00	4.00	3.75	4.00

Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	15.00	14.87½	14.50	13.62½
Electrolytic copper, refinery	14.62½	14.50	14.12½	13.25
Zinc, St. Louis	7.65	7.62½	7.30	6.25
Zinc, New York	8.00	7.97½	7.65	6.60
Lead, St. Louis	9.50	9.50	8.20	8.00
Lead, New York	9.70	9.50	8.50	8.25
Tin (Straits), New York	57.75	57.50	58.37½	51.25
Antimony (Asiatic), N. Y.	*17.00*	17.50	17.00	10.50

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

THE IRON AGE Composite Prices

Aug. 25, 1925, Finished Steel, 2.396c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

One week ago,	2.396c.
One month ago,	2.439c.
One year ago,	2.510c.
10-year pre-war average,	1.689c.

Aug. 25, 1925, Pig Iron, $19.04 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

One week ago,	$19.04
One month ago,	18.96
One year ago,	19.46
10-year pre-war average,	15.72

High				Low			
1923	1924	1925		1925	1924	1923	
2.824c., April 24	2.789c., Jan. 15	2.560c., Jan. 6	Finished Steel	2.396c., Aug. 18	2.460c., Oct. 14	2.446c., Jan. 2	
$30.86, March 20	$22.88, Feb. 26	$22.50, Jan. 13	Pig Iron	$18.96, July 7	$19.21, Nov. 3	$20.77, Nov. 20	

of the industry still stands out conspicuously in point of demand and mill engagement.

Automobile builders are selling a good many more cars than they expected to, and being unprepared for such a development, they have had to buy steel in greater quantities than they had figured on. One instance of this sort refers to steel bars. The original order called for 600 tons for shipment this month, while actual specifications have already reached 3000 tons.

Structural steel demands are holding up in remarkable fashion and makers of plain material also derive a measure of satisfaction from the fact that fabricating companies lately have been able to obtain slightly higher prices on fabricated steel. The railroads still are largely absent from the steel market, but the belief that they soon will be buyers does not subside.

As has been the case now for several months, buying of the past week has been almost entirely for early delivery. That steel consumers, however, regard present prices as reasonable is evident from the fact that there is more interest in large tonnages for future delivery than has lately been observed. A number of opportunities have been presented sheet manufacturers to take fourth quarter contracts at today's levels, and makers of wire products have found that jobbers are a little more anxious to cover than they were recently. Agricultural implement manufacturers also are asking for prices on large tonnages. It is small wonder, therefore, that the trade counts on a good final quarter of the year. The only note of dissatisfaction heard is over prices. Sheets are regarded as being too low, and the same complaint is heard about wire products and the heavy tonnage products, plates, shapes and bars.

The general average of steel plant operations still is pointed upward. The Carnegie Steel Co. has ordered on two blast furnaces at its Duquesne works, one of which will be making iron by the end of the week and the other next week. More iron is needed in keeping with the larger output of ingots and the need of building up reserve stocks also is something of a factor. In the Youngstown district ingot production has gained slightly and it is holding well in the Wheeling district, although some recession is likely there on account of the possibility of smaller demands for the lighter forms of steel.

The pig iron market is extremely quiet and there has been almost no consumer buying of scrap lately. In the coke and coal market, there now seems to be a disposition to wait on something definite with regard to the hard coal situation and the market lacks some of its recent tension.

Pig Iron.—The market here presents nothing of interest outside of the fact that prices are holding. The demand is entirely in small tonnages and most of the sales are of foundry iron. A few small lots of Bessemer iron have been moved, but basic inquiries have been absent since the recent 5000-ton purchase of the American Steel Foundries for its Alliance, Ohio, plant. Outside of the sanitary ware manufacturers, the gray iron foundries in this district are far from busy, and the steel foundries, especially those depending on railroad business, are not averaging over 50 per cent operations. The steel foundries not only are sparing buyers of pig iron, but in some instances are holding up shipments on iron already ordered. Steel companies which buy instead of make their iron appear to have ample supplies for the present. There is, however, very little pressure to sell iron because at today's prices it is doubtful if even the steel companies making iron for the market are getting back a new dollar for an old one.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$18.00
Bessemer	19.00
Gray forge	18.00
No. 2 foundry	18.50
No. 3 foundry	18.00
Malleable	18.50
Low phosphorus, copper free	$27.75 to 28.00

Ferroalloys.—Consumers of ferromanganese in this district still are buying very sparingly, and then for early shipment. Recently, agents of some British producers sought contracts on basis of guaranteeing prices against a decline, the effect of which was to encourage the idea that there might be some recession from $115, Atlantic seaboard, and to discourage forward purchases. It is now understood that those offering to protect buyers against a drop in prices have withdrawn that offer. The market may well be described as firm, because it is figured that British producers cannot, except at a loss, produce ferromanganese and land it in this country at less than today's price of $115, duty paid. Prices of domestic material may be expected to stay up as long as there is no cut in the British product. Important consumers in this district appear to have a supply sufficient to meet their ordinary requirements over the remainder of the year. Ferrotungsten is strong, with sales noted here as high as $1.15 per lb. contained metal. High grade tungsten is said to be very scarce. There is little or no new business in spiegeleisen or 50 per cent ferrosilicon, but that is explained by the fact that consumers are covered by contracts and are drawing against them. Prices are given on page 579.

Semi-Finished Steel.—There still appears to be some weakness in billet and slab prices in the Youngstown district, where recently slabs sold as low as $32, but Pittsburgh mills still disclaim having gone below $35 on either form. Most of the current business in billets, slabs and sheet bars is in specifications against contracts placed late last year and since extended. Demands upon nonintegrated mills are not so heavy that they require more steel than they can secure from regular sources. Rods are moving steadily, but there is no sign yet of forward buying. There is almost no open market activity in skelp. Prices are given on page 579.

Wire Products.—Business continues to gain and producers now think they see evidence that distributers and manufacturing consumers are satisfied that prices will be no lower in the near future in the fact that many who were holding back are increasing their orders and some are seeking contracts. The price situation in the Ironton, Ohio, district still is weak, but this is not unusual, except in very active times. Elsewhere, prices are well maintained, with the prospect bright for a good fall demand from the farmers. Prices are given on page 578.

Rails and Track Supplies.—Eastern railroads are moving slowly on their 1926 rail requirements and consequently on spike, bolt and tie plate supplies. Prices of standard rails seemed to be fixtures, with no intimations of a change. Track supplies hold at recent quotations, but they are untested by large inquiries. Light rails still are sluggish; on billet rails the ordinary quotation is 1.70c., base, mill, but this seems to be merely a negotiation price, as $1 to $2 a ton less is being done on actual business and then in small lots. Prices are given on page 578.

Hot Rolled Flats.—This line is very firm as to prices and there is a week to week demand that gives all producers a fairly good operation. It is claimed that 2.20c., base, on stock wider than 6 in. is unprofitable and only because of the higher base on narrower material does the average price show a margin on the right side. Prices are given on page 578.

Cold Rolled Strips.—Buyers are purchasing closely to their real requirements, but these seem to be sufficient to keep producers reasonably busy. Cases of deviations from a base of 3.75c., Pittsburgh, are so few and then come out on tonnages much larger than the general run, that the market may well be called firm at that level.

Tubular Goods.—Business still is good in the lapweld sizes of pipe and to date the unsettled crude oil market and the break in gasoline prices has been without effect either upon drilling operations or the demand for easing, drive pipe, etc. Standard pipe business is good for the time of year; there is considerable fall building and jobbers over the country with liquidated stocks find it necessary to specify pretty steadily to met the demands upon them. The Lone Star Gas Co., which recently closed for a good-sized tonnage of 18-in. pipe with the leading producer, has placed 25 miles of 16-in. pipe with a Pittsburgh independent and about 40 miles of the feed lines with another independent maker. This line runs from Breckenridge to Fort Worth, Tex., with a spur line from Dennison, Tex., to Durant, Okla. Several makers now are well provided with line pipe business and there is still to be placed 60 miles of 8-in. pipe for the Petroleum Exploration Co., for a line in Kentucky. Boiler tube business still is insufficient to give all makers a share and while prices seem to be holding fairly well on iron tubes, there is fresh weakness in lapweld steel tubes, which lately have been quoted as low as 6 fives beyond the card discounts. Discounts are given on page 578.

Sheets.—There is a slow steady gain in the bookings of sheets and if prices are no higher, the tendency is in that direction. It is the experience of local mills that there is less shading of 2.30c., base, Pittsburgh, on blue annealed sheets than was true recently, and on galvanized sheets, 4.20c., base, Pittsburgh, is not being encountered quite as frequently as recently. There is some inclination by buyers to seek coverage for fourth quarter at today's prices, but not much disposition on the part of the mills to enter the business at these prices. It is probable that some of the present bookings may extend into October before shipments are specified, but generally the mills are disposed to continue the plan of taking business on a basis of shipment at their convenience to be in a position to advance prices in the event that the market will stand higher prices. On the basis of costs the need of materially higher prices is stressed. The agricultural implement makers are very steady sheet buyers and

a good demand from the automobile industry is said to be due to the fact that automobile sales have exceeded expectations and makers were not prepared. Prices are given on page 578.

Tin Plate.—The situation in this product is a happy one for producers, as there is no letup in the demand and not only is production plate moving freely, but all makers have had a chance in the past few weeks to reduce materially their stock lists. Shipments of tin plate by almost all makers have been considerably heavier so far this year than in the same period last year, and it now looks as though this year would make a very favorable comparison with 1923, if, indeed, shipments do not actually go ahead of those for that year, which, with one or two exceptions, was the best in the history of the industry.

Cold Finished Steel Bars.—Large consumers are specifying with much freedom and new demands are on an increasing scale. The automobile parts makers evidently had underestimated their requirements, as the demand from that source is especially good. Very steady buying is observed on the part of agricultural implement makers. There is large capacity for producing cold finished bars and that it is not seriously taxed at present is not a safe measure of the amount of present business. Today's requirements would have strained productive capacity of 10 years ago. On ordinary tonnages the market still is quotable at 2.50c., base, Pittsburgh.

Steel and Iron Bars.—Only on sizable tonnages of steel bars is a price of less than 2c., base, Pittsburgh, yet obtainable. Mills in this and nearby districts still are holding to 2c., base, Pittsburgh, for the general run of orders and claim that this price is the basis on the great majority of sales, although it is admitted that the bulk of the tonnage, comprehending individually large orders, is at a lower figure. Demand for steel bars is good and, as has been the case for several weeks past, there is a constant and appreciable week-to-week gain in the total bookings. Automobile builders appear to have underestimated their requirements and some good sized orders are coming from that source. Not much activity is noted in iron bars but prices are holding. Prices are given on page 578.

Structural Material.—Steel fabricating companies not only are finding a well sustained demand, but competition that is not quite so sharp as it was recently. Thus slightly better prices are obtainable. The situation in plain material does not change much. On tonnages of any considerable size the market is 1.90c., base, Pittsburgh, while for small lots the ruling price is 2c. Prices are given on page 578.

Plates.—There is still insufficient business to give all makers a share, and competition for passing orders consequently is sharp. There is still a quotation of 1.90c., base, Pittsburgh, but only on small lots can that price be obtained. Eastern mills are going as low as 1.80c., Pittsburgh, in northern Pennsylvania and local mills cannot get business outside of the Pittsburgh district at much more. Prices are given on page 578.

Bolts, Nuts and Rivets.—Demand for bolts and nuts is constant enough but it runs entirely to small lots for early delivery, and the chief feature of interest is that prices are so firmly maintained. The rivet market is slow and rather easy. The general run of business of large rivets carries price of $2.40 to $2.50, base, per 100 lb., but sizes carrying good sized extras have been quoted lower and on small rivets attractive orders are being accepted at a lower price than 70, 10 and 5 per cent off list. Prices and discounts are given on page 579.

Coke and Coal.—The past week has not brought much change in the general situation. Two Eastern blast furnace operators, influenced, no doubt, by the possibility of higher prices, in the event that the anthracite mines suspend operation on Sept. 1, have closed for fourth quarter tonnages, one paying $3.50 per net ton at ovens, and the other $3.75. The producers now are talking $3.75 and $4 for fourth quarter tonnages, but there already is some doubt that even $3.50 now can be obtained, since the prospect of higher prices has started a good many producers to prepare for resumptions and it looks as though there might be soon too much coke for the demand. Higher coke prices also are based on the idea that with the H. C. Frick Coke Co.'s starting up idle ovens and still paying the full union wage scale, independent operators will find it hard to hold their crews. Unbiased observers, however, state that the Frick company cannot provide work for all of the men available in the Connellsville district and that independent operators, therefore, are not likely to suffer labor shortages. There seems to be some fear that the United Mine Workers will attempt unionization in the non-union district in the event that the hard coal suspension lasts long enough to advance materially soft coal prices. Spot furnace coke still is quotable at $3.25 per net ton at ovens, and spot foundry grade $4 to $4.50. Prices are given on page 579.

Old Material.—The market shows little activity in the steel works grades, except for the efforts of an Ohio River steel maker to secure heavy melting steel at $19. Dealers will pay that price and it is hard for consumers to find even ordinary melting steel at less than $19.50. Scrap is not plentiful because industrial scrap is not coming out freely and dealers are disposed to hold firmly their yard stocks in the belief that improvement in steel business and larger steel works operations must bring about a demand for scrap that will put prices higher. Rerolling rails have advanced 50c. a ton since a week ago and heavy steel axle turnings a like amount, but there is no occasion to change prices of other grades. Foundries in this district are not busy and pig iron is too cheap for them to "jump" for scrap.

Low phosphorus billet and bloom crops are scarce, and on a few small sales prices have stiffened $1 a ton.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

	Per Gross Ton
Heavy melting steel	$19.00 to $19.50
No. 1 cast, cupola size	17.50 to 18.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md., Huntington, W. Va., and Franklin, Pa.	20.50 to 21.00
Compressed sheet steel	17.50 to 18.00
Bundled sheets, sides and ends	16.50 to 17.00
Railroad knuckles and couplers	21.00 to 21.50
Railroad coil and leaf springs	21.00 to 21.50
Low phosphorus blooms and billet ends	23.00 to 23.50
Low phosphorus plate and other material	21.50 to 22.00
Railroad malleable	19.00 to 19.50
Steel car axles	21.00 to 21.50
Cast iron wheels	17.50 to 18.00
Rolled steel wheels	21.00 to 21.50
Machine shop turnings	15.00 to 15.50
Short shoveling turnings	15.00 to 15.50
Sheet bar crops	20.00 to 20.50
Heavy steel axle turnings	17.00 to 17.50
Short mixed borings and turnings	14.00 to 14.50
Heavy breakable cast	16.50 to 17.00
Stove plate	14.00 to 14.50
Cast iron borings	15.00 to 15.50
No. 1 railroad wrought	15.50 to 16.00
No. 2 railroad wrought	19.00 to 19.50

Two 70,000-hp. hydraulic turbines, installed by the William Cramp & Sons Ship & Engine Building Co., for the Niagara Falls Power Co. last year, have recently been tested for efficiency. They gave a maximum result of no less than 93.8 per cent. These units have developed considerably more than the extraordinarily high rated horsepower.

The Sloss-Sheffield Steel & Iron Co. will next week begin the hauling of coal from its mines 25 miles west of Birmingham to the North Birmingham by-product coke plant, with its own locomotives and cars operated on its own railroad.

For use as a steel warehouse the Dickerson Steel Co., Dayton, Ohio, has purchased one of the units in the Davis factory community at Dayton. The building acquired is a one-story structure and contains 25,000 sq. ft. of floor space.

Chicago

Heavy Demand for Bars and Prices Firm —Steady Pig Iron Bookings

CHICAGO, Aug. 25.—The heavy demand for mild steel bars is the outstanding feature of the finished steel market. The bar bookings of a leading producer thus far in August exceed those for the same period of July by fully 70 per cent. This business is well diversified, coming from practically all sources, but the tonnage emanating from the farm equipment industry has been particularly heavy. New commitments in plates and shapes, on the other hand, are lighter than a week ago, although specifications against previous obligations are unabated. Current releases on these two products substantially balance production, but bar bookings remain in excess of shipments.

At the moment there is little activity in track material, although a generous buying movement in rails and track supplies is expected to get under way soon. No new car buying has developed, but 40,000 tons of plates, shapes and bars, representing the remaining requirements for past orders for equipment has been divided between local mills. Railroad car builders find encouragement in the New York Central and Illinois Central inquiries for 1000 cars each, which it is hoped may lead to the purchase of several times that number.

Contracting for wire products is gradually gathering momentum, particularly in the agricultural sections. Forward buying of other finished steel commodities, with the possible exception of sheets, has not yet assumed important proportions. Consumers are still buying largely for early requirements and continue to press for deliveries, thereby betraying lack of stocks. In fact, the surprising factor of the market is that hand-to-mouth purchases are supporting such a large output in the heavier products.

The foremost independent continues to produce at 80 per cent of ingot capacity, and the leading interest remains on a 75-per cent basis. Steel works blast furnace operations are unchanged. It is the belief of the mills that railroad buying of rails and equipment added to the present volume of business would soon produce a strong market condition. The frugality of purchases by the carriers since early in the year, the steady improvement in their earnings, and the promise of still heavier traffic when the grain and coal movements get under way are all regarded as harbingers of a more liberal buying program this fall.

The increased confidence of producers finds reflection in a firmer attitude on prices, especially on bars, plates and shapes. Reports of concessions from the 2.10c., Chicago, level on these products have largely disappeared, except in connection with orders taken for shipment to neutral territories, where the competition of outside producing centers cannot be ignored.

Pig Iron.—Buying for both early and fourth quarter deliveries is proceeding steadily but quietly, and it now seems likely that bookings for merchant furnaces in this district for August will materially exceed those for July. Shipments also will show a gain over the previous month. A Wisconsin inquiry for 1000 tons of malleable iron calls for first half shipment, but producers are disinclined to quote for delivery that far ahead. Local prices are firm, but there does not seem to be any immediate prospect of an advance. The fuel situation is being closely watched, as advances in coking coal might be the forerunner of a rise in pig iron. Current inquiries include 1000 tons of malleable, wanted by a Michigan melter, and 600 tons of foundry for a Wisconsin user, both for fourth quarter delivery. No sales of Southern foundry are reported. Charcoal is dull, with sales confined to carload lots. Recent carlot sales of silvery indicate no gain in strength by that commodity. For several weeks efforts have been made without success to advance silvery $1 a ton, or to the basis of $30.79, delivered, for 8 per cent. Fourteen to 16 per cent ferrosilicon has declined on late sales to $42.50, delivered. Low phosphorus is inactive.

Quotations on Northern foundry, high phosphorus, malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$20.50
Northern No. 1 foundry, sil. 2.25 to 2.75	21.00
Malleable, not over 2.25 sil.	20.50
High phosphorus	20.50
Lake Superior charcoal, averaging, sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (all rail)	$23.51 to 24.51
Southern No. 2 (barge and rail)	22.68
Low phos., sil. 1 to 2 per cent, copper free	31.20
Silvery, sil. 8 per cent	29.79 to 30.79
Ferrosilicon, 14 to 16 per cent	42.50

Ferroalloys.—A report that the Steel Corporation has been a recent seller of ferro-manganese lacks confirmation. Sales of spiegeleisen have been small, most of them carlots. An Iowa buyer has closed for 100 tons. The lowest going price is said to be $32, Eastern furnace, or $39.76, delivered. Jackson County material is still available at $35, furnace, or $40.04, delivered.

We quote 80 per cent ferromanganese, $122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, $85, delivered; spiegeleisen, 18 to 22 per cent, $39.76 to $40.04, delivered.

Plates.—Fully 40,000 tons of plates, shapes and bars for railroad equipment has been divided between local mills during the week. The material represents requirements for cars to be built for the Texas & Pacific, the Missouri-Kansas-Texas, and the Chicago, Milwaukee & St. Paul, and underframes to be constructed for the Great Northern. The New York Central has entered the market for 1000 70-ton gondola cars. The inquiry is regarded as a move to test the market and as a possible forerunner of much heavier purchases by that road. A car ferry to be built for the Wabash Railway by the Manitowoc Shipbuilding Co. will require 3500 tons. Gas holders for erection at Oakland, Cal., call for 4000 tons. No large oil storage tank projects are reported, but a local mill has booked 1000 tons of plates for miscellaneous tank work. Stimulation of tank construction is expected to follow the current decline in gasoline, which will make it expedient to store oil pending a recovery of prices. Plate bookings substantially balance production and mill prices show no particular change.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plate out of stock.

Bars.—Soft steel bars are the most active of all finished steel commodities; in fact, the bookings of an important mill thus far in August show a gain of 70 per cent over the same period in July. Part of this improvement is traceable to the high rate of operations among farm implement and tractor manufacturers, who are enjoying the best business since 1920. Leading implement companies are producing at 70 per cent or better, while a number of tractor makers are finding it difficult to keep pace with orders, even when running full. Changes in models have slowed up automobile production but this pause in activity is expected to be followed later on by even heavier output than was attained in June and July. Bar iron demand is slowly improving, although still far from satisfactory owing to the dearth of railroad buying. As low as 1.90c., Chicago, can still be done on this product, although 1.95c. is the more usual price. There is no change in rail steel bar prices and mills look for a continuation of full operations. For the first time in years a Chicago Heights rail steel bar mill has gone through the summer on a double turn basis. Heavy bookings for fence post manufacture and for concrete reinforcing are largely responsible for this record.

Mill prices are: Mild steel bars, 2.10c.; common bar iron, 1.90c. to 2c., Chicago; rail steel, 2c., Chicago and 2c., mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.60c. for rounds and hexagons and 4.10c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c.

Structural Material.—Demand for plain material is the heaviest since 1923 and the large tonnage in fresh projects augurs well for an active fall in the structural field. Notwithstanding the encouraging volume of business, competition among fabricators remains very keen and current bids include a number which allow for little margin for profit. Bids on the Adams Street Bridge, Chicago, 2500 tons, will be opened Sept. 1. Among promising prospects is an outer drive bridge in Grant Park for the South Park Board, Chicago, requiring 3000 tons. A plant addition for the A. O. Smith Corporation, Milwaukee, 1300 tons, has been awarded to the Milwaukee Bridge Co.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Wire Products.—Contracting by jobbers is well under way in the South and the movement is spreading northward. Demand from the manufacturing trade is well diversified and likewise is growing in volume. While the mills are not yet besieged with a flood of new commitments, bookings in the third week of August showed an encouraging gain over the two prior weeks. Stocks of both buyers and mills are still low and there is not likely to be any tendency to increase production faster than the betterment in demand warrants. Notwithstanding the caution of the mills in this regard, operations are on the up grade, averaging better than 60 per cent. The recent announcement of spring terms has stimulated demand for woven wire fence. For mill prices see page 578.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, $3.05 per 100 lb.; common wire nails, $3.15 per keg; cement coated nails, $2.15 to $2.20.

Rails and Track Supplies.—A heavy buying movement in track material is expected to get under way soon. At the moment, however, bookings of both rails and track supplies are light. A local mill has taken an aggregate of 6000 kegs of spikes and bolts during the week. Greater demand for light rails is looked for in view of the indications of improved operations at the coal mines. An order for 500 tons of light rails has been placed with a Chicago producer.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.25c. to 2.35c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c. base, and track bolts 4.55c. base.

Bolts, Nuts and Rivets.—Specifications for bolts and nuts continue to come in at an unchanged rate, warranting a continuation of output at 65 to 70 per cent, and, in some cases, even better. Bolt and nut discounts are steady. Books have not been opened for fourth quarter, and it is still uncertain what prices will govern for that delivery. Present indications would point to no change in discounts, but in some quarters there is talk of possible price advances. The discount on small rivets remains at 70, 10 and 5 off, Chicago, but there is a growing tendency on large rivets to quote $2.50, Chicago, rather than the former figure of $2.60. For mill prices see page 579.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to ⅞ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to ⅞ x 4 in., 50 off; larger sizes, 50 off; hot-pressed nuts, squares, tapped or blanked, $3.50 off; hot-pressed nuts, hexagons, tapped or blank, $4 off; coach or lag screws, 60 per cent off.

Sheets.—The price situation continues to gather strength and while the lower prices carried below have not entirely disappeared, the market is notably firmer. This is especially true of galvanized sheets, on which 4.40c., Western mill, or 4.45c., Chicago, is more commonly obtained. Heavier demands from the farm implement makers are a source of encouragement.

Chicago delivered prices from mill 3.35c. to 3.40c. for No. 28 black, 2.45c. to 2.50c. for No. 10 blue annealed and 4.40c. to 4.45c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.50c. base for blue annealed, 4c. base for black, and 5c. base for galvanized.

Cast Iron Pipe.—On the general run of business ruling quotations on pipe range from $41 to $42, base Birmingham, for 6-in. and larger sizes. In fact, bids taken yesterday on 868 tons of 12 and 16-in. for Chicago suggest an advancing tendency of prices. The low bid, that of the United States Cast Iron Pipe & Foundry Co., figured back to $41.73, base Birmingham, while the two other bidders, James B. Clow & Sons and the American Cast Iron Pipe Co., both quoted $42 base. Chicago will also take figures Sept. 2 on 1140 tons of 8-in. class B. North Riverside, Ill., took bids today on 550 tons of 6 and 8-in. class B. Mundelein, Ill., will receive tenders Aug. 28 on 170 tons of 8-in. and 375 tons of 6-in. class B. The United States Cast Iron Pipe & Foundry Co. will furnish 1000 tons for Fairfield, Ill., and the National Cast Iron Pipe Co. will supply 1200 tons for Newkirk, Okla.

We quote per net ton f.o.b. Chicago, as follows: Water pipe, 4-in., $53.20 to $54.20; 6-in. and over, $49.20 to $50.20; Class A and gas pipe, $4 extra.

Reinforcing Bars.—The reinforcing for the Stevens Hotel, Chicago, 1950 tons, has been placed with Joseph T. Ryerson & Son, thus disposing of the second of three large projects which recently came up for bids. Section 11 of the South Water Street double-decking project, Chicago, 1300 tons, has not yet been settled. An unusual amount of pending tonnage is before the trade Warehouse prices on billet reinforcing bars remain at 2.60c., Chicago. **Lettings include:**

Stevens Hotel, Chicago, 1950 tons, to Joseph T. Ryerson & Son.

Dance pavilion, Lawrence & Winthrop Avenues, Chicago, 260 tons of rail steel, to the Inland Steel Co.

Plotke & Crosby, fifteen-story hotel, Chicago, 1540 Lake Shore Drive, 500 tons of rail steel, to Inland Steel Co.

Reynolds office building, Jackson, Mich., 125 tons, to Truscon Steel Co.

Commonwealth Edison Co., Crawford Avenue Station, Chicago, 200 tons, to American System of Reinforcing.

St. Joseph's Nurses Home, St. Paul, Minn., 150 tons, to Hustad & Co.

Addition to Waukesha Moor Baths, Waukesha, Wis., 100 tons, to American System of Reinforcing.

Pending work includes:

Y. M. C. A. building, South Chicago, 200 tons, Berlin & Swern, architects.

Knights of Columbus club house, Fullerton and Washtenaw Avenues, Chicago, 450 tons, Shattuck & Layer, architects.

Lansing apartments, Dearborn and Maple Streets, Chicago, 125 tons, Oldefest & Williams, architects.

Mack International Motor Truck Corporation, superstructure for plant addition, Chicago, 225 tons, S. Scott Joy, architect.

Hudson Motor Car Co., press shop, Detroit, 165 tons, Albert Kahn, Detroit, architect.

Lloyd's Theater, department store and apartment building, South Bend, Ind., 900 tons, K. M. Vitzthum & Co., Inc., architect, Chicago.

Pennsylvania Railroad office building, Philadelphia, 500 tons, Graham, Anderson, Probst & White, Chicago, architects.

Esperson building, Houston, Tex., 300 tons, John Eberson, Chicago, architect.

Za Ga Zig Shrine Temple, Des Moines, Iowa, 265 tons, J. W. Elliott, Minneapolis, low bidder on general contract.

Salvation Army Home, Detroit, 100 tons, A. C. Fehlow, architect, Detroit.

Piccadilly Theatre, Chicago, 200 tons, Rapp & Rapp, Chicago, architects.

Chicago, North Shore & Milwaukee Railroad, Oklahoma Avenue crossing, Milwaukee, Wis., 100 tons.

Available Storage Co., warehouse, 7730 Stony Island Avenue, Chicago, 100 tons. Dunford & Stanton, Chicago, architects.

Wabash Railway, bridge, Decatur, Ill., 160 tons.

Apartment building for August West, Sixty-seventh Street and Jeffrey Avenue, Chicago, 140 tons, general contract awarded to A. & E. Anderson Co.

Public school, 100th & Leavitt Streets, Chicago, 150 tons, Great Lakes Engineering Co., low bidder on general contract.

Public school, Carmen and Kenneth Streets, Chicago, 150 tons, Michuda Bros., Chicago, low bidder on general contract.

University of Wisconsin, men's dormitory, Madison, Wis., 150 tons, W. W. Oeflein Co., Milwaukee, low bidder on general contract.

Additional section South Water Street, double-decking, Chicago, 2000 tons, figures about to be asked.

Coke.—Although advances in the Connellsville district are being watched closely, no change in the price of by-product foundry coke is believed to be imminent. This commodity remains unchanged at $10.25, delivered Chicago, and $9.75, Chicago ovens, for outside shipment.

Old Material.—Two independent mills have succeeded in purchasing small tonnages of heavy melting steel at $17 per gross ton delivered. Buyers still show a disposition to resist price advances, but, on the other hand, dealers are loath to sell because of the difficulty of obtaining supplies. It is doubtful whether heavy melting can be bought from any source at less than

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New York

Pig Iron Inquiry Shows Increase — Low Bids on Export Cast Iron Pipe

NEW YORK, Aug. 25.—Both in new inquiry and in sales the pig iron market has gained in the week. Several of the larger foundry companies have shown more interest than in the past two months. An important inquiry, which came out this week, is for 10,000 tons from a company which buys in New York for plants in different parts of the country. The exact amount of the General Electric Co.'s latest contracts is not given, but a number of 500-ton lots are reported. In Connecticut a jobbing foundry that came into the market last week for 1000 tons, half No. 2 plain and half No. 2X for delivery in the fourth quarter, actually closed for 1500 tons. There are several other instances of purchases in excess of original inquiries. In Connecticut two 500-ton lots of No. 1X foundry for delivery in the remainder of the year are reported among the week's sales. A New Jersey foundry is inquiring for 2000 tons, 1500 tons of one grade and 500 tons of another. The report that an important interest has closed lately for 25,000 tons of foreign basic is not confirmed. The same buyer contracted late in 1924 for the above amount of Indian basic for New England delivery over the first six months of this year. Prices have not changed, though there are indications of more firmness in the attitude of some sellers due in part to the possible effects of an anthracite strike on the coke market and in part to signs of increase in buying, with practically no change in production, while stocks in some cases have shown a slight decrease. The common Buffalo basis is $18.50 for No. 2X. Eastern Pennsylvania iron maintains the firmer position that has been noted in the past two or three weeks.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$23.02 to $23.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.52 to 24.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	24.02 to 24.52
Buffalo, sil. 1.75 to 2.25	23.41 to 23.91
No. 2 Virginia, sil. 1.75 to 2.25	28.44 to 28.94

Ferroalloys.—A sale of 350 tons of ferromanganese at the full price of $115, seaboard basis, is noted, together with a few sales of carload and larger lots, all for delivery this year. There are several inquiries before the market, none of them large however. It is believed by some sellers that considerable alloy must yet be bought for consumption this year, and that there are a number of large consumers still hesitating to place orders. Sales and inquiries in the spiegeleisen market continue moderate.

Warehouse Business.—Buying is spotty, shows a slight decline from last week, and August has run about 10 per cent below July. In reinforcing bars there was an appreciable falling off of demand. Prices are at previous levels, and in the case of sheets they are pretty steady at 4.90c. to 5.35c. for galvanized, No. 28 gage. If one may judge from the demands made upon a large interest to help fill some orders taken by other jobbers, warehouse stocks must be getting low. We quote boiler tubes per 100 ft. as follows:

Lapwelded steel tubes, 2-in., $17.33; seamless steel, 2-in., $20.24; charcoal iron, 2-in., $25; 4-in., $67.

Finished Iron and Steel.—Price weakness continues to develop in some products, particularly plates and bars. Although 1.80c., Pittsburgh, is the usual price on plates, 1.75c. has been accepted by mills in a few special cases, and a large buyer is reported to have placed a few hundred tons at 1.70c., Pittsburgh. The quoting of 1.90c., Pittsburgh, on steel bars is becoming more widespread, with 2c. still being obtained on the ordinary run of orders. Iron bars have weakened in line with steel bars and because of lack of demand are now quite easily obtainable at 2.14c. to 2.24c., New York, the lower price, equivalent to 1.80c., Pittsburgh, being usual on the more desirable orders. Most of the independent sheet makers are quoting galvanized at 4.30c. and black at 3.20c., but as these prices are higher than those named by the American Sheet & Tin Plate Co. they are having difficulty in getting them. A good deal of the current business is going at 4.20c., Pittsburgh, for galvanized and 3.10c. to 3.15c. for black. Sales of blue annealed are being made at 2.25c. and 2.30c., Pittsburgh. Some mills quote the lower price only on the heavier gages. There have been good sales of light gages of galvanized sheets and a few mills are booked many weeks ahead on this class of business. No large structural projects were placed during the week, except 10,000 tons for two projects in New York, but the total for August compares favorably with the July tonnage. In fact, this has been an unusual summer in structural steel lettings. Bids are in on several large projects, settlement of which is expected soon, especially for the reason that prices on fabricated steel are showing a slightly upward tendency. It is said that many of the contracts recently placed have been without profit to the fabricators. The prices on plain material continue unchanged at 1.90c. to 2c., Pittsburgh, with some Eastern mills quoting 2c. to 2.10c., mill. Tin plate and pipe continue two of the most active items. Two pending inquiries for line pipe call for a total of 10,000 tons. The Nippon Oil Co. of Japan is in the market for 44,000 boxes of tin plate.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.24c. to 2.34c.; plates, 2.14c. to 2.24c.; structural shapes, 2.14c. to 2.24c.; bar iron, 2.14c. to 2.24c.

Cast Iron Pipe.—Orders for pressure pipe keep abreast of shipments, mills working off little back-log, and plenty of good business is about to be let. To meet demands, one maker had to let out parts of orders to other mills. On the smaller sizes six-weeks delivery is generally named. Yet, strangely, price cutting is not absent. On an export order $37, Birmingham, was the figure; not even foreign makers went so low. New York City soon will be in the market for about 10,000 tons, 6- to 30-in.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $50.60 to $51.60; 4-in. and 5-in., $55.60 and $56.60; 3-in., $65.60 to $66.60, with $5 additional for Class A and gas pipe. Discounts of both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 45 to 50 per cent off list; heavy, 55 to 60 per cent off list.

Old Material.—There has been a pause in the buying of steel mill scrap, but scrap brokers were confident today that one or two large tonnages would be placed this week. Meanwhile the prices quoted a week ago still stand, but it is difficult for brokers with orders on hand to buy at the prices that their contracts will permit them to pay. Scrap dealers apparently are holding for a further rise in prices.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$11.75 to $12.25
Heavy melting steel, (railroad or equivalent)	13.25 to 13.75
Rails for rolling	14.25 to 14.75
Relaying rails, nominal	23.00 to 24.00
Steel car axles	21.50 to 22.00
Iron car axles	24.00 to 24.50
No. 1 railroad wrought	14.00 to 14.50
Forge fire	10.50 to 11.00
No. 1 yard wrought, long	13.00 to 13.50
Cast borings (steel mill)	9.50 to 10.00
Cast borings (chemical)	13.00 to 14.00
Machine shop turnings	9.25 to 10.00
Mixed borings and turnings	9.00 to 9.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	12.00 to 12.50
Stove plate	10.50 to 12.00
Locomotive grate bars	11.00 to 11.50
Malleable cast (railroad)	15.00 to 15.50
Cast iron car wheels	13.50 to 14.00
No. 1 heavy breakable cast	13.75 to 14.25

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$17.50 to $18.00
No. 1 heavy cast (columns, building material, etc.), cupola size	16.00 to 16.50
No. 2 cast (radiators, cast boilers, etc.)	15.00 to 15.50

San Francisco

Inquiries Slightly Better—Prices Unchanged—Rails More Active

SAN FRANCISCO, Aug. 22 (*By Air Mail*).—Some slight improvement in the number of inquiries and a more active interest in rails and track supplies were the two principal developments of the past week. Prices generally remain unchanged, although rumors of low quotations continue to be heard, particularly in mill prices for reinforcing bars. Less than 2.35c., c.i.f. Coast ports, is understood to have been named during the week by an Eastern mill. Belgian reinforcing bars are still quoted at 1.90c., base, duty paid, c.i.f., but no volume of business is being placed. A relatively small but unknown tonnage of Belgian and Swedish bars was received by local firms during the week on contracts placed some time ago.

Pig Iron.—A local importer received about 1000 tons of Belgian foundry iron during the week, most of which has already been sold here and in the Los Angeles district. No fresh inquiries of consequence were developed during the week. Current bookings are usually for small lots. The inquiry for 500 tons of foundry iron, reported a week ago, has not yet been placed. Prices are unchanged.

*Utah basic	$27.00 to $28.00
*Utah foundry, sil. 1.75 to 2.25	27.00 to 28.00
**English foundry	27.00 to 28.00
**Belgian foundry	26.00
**Dutch foundry	25.00
**Indian foundry	26.50
**German foundry	26.50
*Birmingham, Ala., foundry, sil. 2.75 to 3.25	29.00 to 30.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Fresh inquiries call for about 1836 tons. Lettings during the week were relatively small, aggregating about 375 tons. Plans are being figured and bids will be called within a few days for a nineteen-story hotel in Oakland. Prices are unchanged at 2.35c. to 2.40c., c.i.f. Coast ports.

Plates.—While 2.30c., c.i.f. Coast ports, has been named and some business placed at that figure, 2.35c. is more general for going business in the present market. Current orders are nearly all small. The Southern Pacific Co. has placed 300 tons and the Standard Oil Co. has placed 250 tons with Eastern mills. The Oregon-Oriental Steamship Co. placed 300 tons with the Albina Marine Iron Works of Portland. The Olympic Calpet Refining Co., Smith Cove, Seattle, Wash., has awarded the general contract for one 55,000-bbl. tank, requiring about 200 tons, to Cornell Bros. & Walsh, Tacoma, Wash.

Bars.—Interest is somewhat better, but most of the jobs requiring reinforcing bars are comparatively small. Soft steel bars are unchanged at 2.45c. in 100-ton lots, mill shipment, f.o.b. San Francisco, and 2.50c., base, per 100 lb. Reinforcing bars are steady at 3.25c., base, 250-ton lots out of jobbers' stocks; 3.35c., base, carload, and 3.80c., base, l.c.l. Recent lettings include the following:

Hotel building, Del Monte, Cal., 250 tons, to an unnamed San Francisco jobber.

Community Apartment, Pacific and Laguna Streets, San Francisco, Cal., 200 tons, to an unnamed San Francisco jobber.

Cornelius Apartments, Seattle, Wash., 150 tons, to Pacific Coast Steel Co.

Swedish Hospital addition, Seattle, Wash., 100 tons, to Pacific Coast Steel Co.

Olympic Calpet Refining Co., Smith Cove, Seattle, Wash., 100 tons, to Pacific Coast Steel Co.

Rail and Track Supplies.—The Southern Pacific Co. will close bids Sept. 2 for 4200 tons of tie plates, 2000 tons of track spikes and 240 tons of track bolts. A fresh inquiry is in the market for 800 tons of 80-lb. rails. The Charles Nelson Lumber Co. is inquiring for 500 tons of 50-lb. rails. A northern California lumber company placed 256 tons of 70-lb. rails with an Eastern mill, and the San Joaquin Light & Power Co., Fresno, Cal., has placed 350 tons of 50-lb. rails with the United Commercial Co. This company is understood also to have completed its delivery of 500 tons of 70-lb. Belgian rails to the Yosemite Valley Railroad Co.

Warehouse Business.—Jobbers report slightly brisker business for the past week. In some cases it is believed that August sales will be better than the July total. Current orders, however, are mostly for small quantities. Prices are unchanged.

Merchant bars, $3.30 base, per 100 lb.; merchant bars, ⅜ in. and under, rounds, squares and flats, $3.80 base, per 100 lb.; soft steel bands, $4.15 base, per 100 lb.; angles, ⅞ in. and larger x 1½ in. to 2¾ in., inc., $3.30 base, per 100 lb.; channels and tees, ¾ in. to 2½ in., inc., $3.90 base, per 100 lb.; angles, beams and channels, 3 in. and larger, $3.30 base, per 100 lb.; tees, 3 in. and larger, $3.30 base, per 100 lb.; universal mill plates, ¼ in. and heavier, stock lengths, $3.30 base, per 100 lb.; spring steel, ¼ in. and thicker, $6.30 base, per 100 lb.; wire nails, $3.50 base, per 100 lb.; cement coated nails, $3 base, per 100 lb.; No. 10 blue annealed sheets, $3.70 per 100 lb.; No. 28 galvanized sheets, $5.75 per 100 lb.; No. 28 black sheets, $4.65 per 100 lb.

Sheets.—Buying is very quiet and prices are weak. The Contract Water Co., Azusa, Cal., has awarded 200 tons of blue annealed sheets to the Los Angeles Mfg. Co. Blue annealed sheets are quoted 2.30c., Pittsburgh, but an Eastern mill is understood to have quoted 2.25c. during the week for a comparatively small tonnage. Black sheets are quoted at 3.15c., Pittsburgh, and galvanized sheets at 4.30c., although less than this has been named recently.

Cast Iron Pipe.—Pasadena, Cal., has awarded 405 tons, as follows: to U. S. Cast Iron Pipe & Foundry Co., 120 tons; to Stephen Smith & Co., 210 tons, and to the Keystone Iron & Steel Works, 75 tons of fittings. In the job at Modesto, Cal., requiring 128 tons, for which bids have closed but no award announced, it is understood that the French bid was about $48.50 per ton, duty paid, c.i.f. San Francisco. This is understood to be $2 less than the lowest American bid, which was $50.50 per ton, c.i.f. San Francisco.

Steel Pipe.—The Southern Pacific Co. has awarded 175 tons of plain-end, beveled line pipe to Crane & Co. The Mesa, Ariz., job calling for 118 tons of Matheson joint pipe has been postponed.

Coke.—A local importer received 2000 tons of English coke during the week. Current sales are still confined to small lots with some few exceptions. Prices are unchanged.

English beehive, $16 at incoming dock, and English by-product, $14; German by-product, $14 to $14.50; Birmingham, Ala., by-product, $19 delivered; Wise County, Va., beehive, $22 delivered.

Birmingham

Both Pig Iron and Finished Steel in Active Demand

BIRMINGHAM, Aug. 25.—Small lots predominate in the selling of pig iron in the Southern territory, but the aggregate continues almost equal to the make. Quotations are firm on an $18 to $18.50 per ton base for No. 2 foundry, with 50 cents advance being asked for the fourth quarter delivery. While numerous inquiries have been received for fourth quarter iron the deals consummated are hardly noteworthy. Southern Ohio melters still are receiving small lots of Southern iron. In addition to the steady delivery to pipe shops in this district, stove foundries have started in for the fall and winter season, but foundries with diversified outputs continue to buy in the hand-to-mouth fashion. The surplus iron is being reduced slowly. The Woodward Iron Co. has four blast furnaces in operation with three on foundry and one on basic; the Republic Iron & Steel Co., two on foundry; Sloss-Sheffield, five on foundry, and Central Coal & Iron, one on foundry; the Tennessee Coal, Iron & Railroad Co. has 11 and the Gulf States has one on basic iron.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$18.00 to $19.00
No. 1 foundry, 2.25 to 2.75 sil.	19.00 to 19.50
Basic	18.50 to 19.50
Charcoal, warm blast	30.00 to 32.00

Finished Steel.—All finishing mills in this district are in operation, many of them to capacity. Some steel shapes are being taken from warehouses. Fabricating plants are working almost to capacity, structural shapes and plate fabrication being in splendid demand. Adjoining States are in the midst of building activities and the Birmingham district is being called upon for steel. This building activity is expected to continue without interruption by reason of weather and to warrant steady operation of plants here. Soft steel bars Birmingham, are quoted at 2.05c. to 2.15c.

Cast Iron Pipe.—Orders placed in this territory are keeping plants at capacity operations, with promise of extending the period over 90 days at least, with steady demand through the remainder of the year.

Coke.—Production and shipment of coke are being maintained and the quotations remain unchanged, $4.50 to $5 for foundry coke, bee-hive and by-product. Local consumption has increased and outside demand is more than holding its own. A little shortage of cars is apprehended. This is another industry which on the turn of the year will, it is believed, see a material increase in production.

Old Material.—Much scrap iron and steel is being delivered by dealers to consumers and a considerable quantity is being received on the yards of dealers. Heavy melting steel is quoted at $13. Recent purchase by the Tennessee Coal, Iron & Railroad Co. aroused much interest. Consumers of various kinds of old material are buying for immediate needs only.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	13.00 to 14.00
Railroad wrought	12.00 to 13.00
Steel axles	16.00 to 17.00
Iron axles	16.00 to 17.00
Steel rails	13.00 to 14.00
No. 1 cast	16.00 to 16.50
Tramcar wheels	16.50 to 17.00
Car wheels	15.00 to 16.00
Stove plate	13.00 to 13.50
Machine shop turnings	7.00 to 8.00
Cast iron borings	7.00 to 8.00
Rails for rolling	16.50 to 17.00

Buffalo

Pig Iron, Steel and Scrap Markets Generally Quiet

BUFFALO, Aug. 25.—Inquiry has slackened off a trifle and this week is reported as about 5000 tons in all. Most of the individual lots were small, though two were for 1000 tons of foundry iron each. A 2000-3000 ton lot of foundry iron, which came up last week from Connecticut, is reported as closed. Most of the inquiry this week is from outside New York State. One producer booked about 3000 tons altogether. One order was a lot of between 500 and 1000 tons of foundry and malleable. It is probable that nothing below $18.50 is being done and some furnaces are making a more or less successful effort to adhere to a $19 base. One furnace interest reports that it has been able to obtain the differentials in some cases. Operations remain as before, ten stacks in blast.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25	$18.50 to $19.00
No. 2X foundry, sil. 2.25 to 2.75	18.50 to 19.00
No. 1 foundry, sil. 2.75 to 3.25	19.00 to 19.50
Malleable, sil. up to 2.25	18.50
Basic	18.50
Lake Superior charcoal	29.28

Finished Iron and Steel.—Bids will be taken for the steel work in the new Peace bridge on Oct. 1. The amount is 8500 tons. Reinforcing bar inquiry has been light, the largest lot placed during the week being about 75 tons. About 200 tons of road mesh was placed. The bar and shape market is fair, with 2.265c. quoted in the former case and 2.165c. for shapes. Operations are only fair. Bethlehem is reported to have nine open hearth furnaces in operation; the Donner Steel Co. seven and Wickwire-Spencer two. The Seneca Iron & Steel Co. is running close to full operation. From warehouses sheets are a little more active, due to the busy schedules of sheet mills in the Valley, which in some cases are reported as six weeks behind in delivery.

Warehouse prices are being quoted as follows: Steel bars, 3.25c.; steel shapes, 3.35c.; steel plates, 3.35c.; No. 10 blue annealed sheets, 3.80c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, 5.45c.; cold rolled shapes, 4.40c.; cold rolled rounds, 3.95c.; wire nails, 4c.; black wire, 4.05c.

Old Material.—Local consumers remain comparatively inactive, but outside points are developing a market which is of interest to Buffalo dealers. Scrap is scarce and even if a mill came into the market, it would probably be difficult to obtain a large tonnage of heavy melting steel. One mill is getting small lots of a certain grade of heavy melting for $17 to $17.50. The outside market has boosted the price of borings and turnings a little here, with the demand coming from Pittsburgh and Cleveland. The sale of a small tonnage of low phosphorus at $19.50 is reported.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$17.50 to $18.00
Low phosphorus	19.00 to 20.00
No. 1 railroad wrought	16.00 to 16.50
Car wheels	16.50 to 17.50
Machine shop turnings	12.50 to 13.00
Cast iron borings	12.50 to 13.00
No. 1 busheling	15.00 to 15.50
Stove plate	15.25
Grate bars	14.25 to 14.75
Hand bundled sheets	14.00 to 14.50
Hydraulic compressed	16.00 to 16.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	19.00 to 19.50
No. 1 cast scrap	17.00 to 17.50
Iron axles	26.00 to 27.00
Steel axles	17.00 to 17.50

St. Louis

Better Buying in Pig Iron and Reinforcing Steel

ST. LOUIS, Aug. 25.—Sales of pig iron during the last week showed considerable improvement, reaching a total of about 17,500 tons, of which the principal item was 13,000 tons of basic sold by the St. Louis Coke & Iron Co. to an East Side melter. The Granite City maker also sold 1500 tons of foundry iron to a railroad equipment concern. An Iowa implement maker purchased 200 tons and a Kentucky melter 150 tons of foundry iron for prompt shipment. A machinery builder bought 300 tons for delivery during the remainder of the year, and a job foundry bought 200 tons for third quarter delivery. The principal inquiry is for 500 tons from a Pacific Coast melter. A leading Southern maker is quoting $18.50, Birmingham, for third quarter and $19 for fourth quarter shipment. Northern iron is quoted at $20.50 to $21, Chicago, and the local maker $21.50 to $22, Granite City. Stove makers and implement manufacturers are showing great activity.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City.

Northern fdy., sil. 1.75 to 2.25	$22.66 to $23.16
Northern malleable, sil. 1.75 to 2.25	22.66 to 23.16
Basic	22.66 to 23.16
Alabama fdy., sil. 1.75 to 2.25 (rail)	22.67 to 24.17
Tennessee fdy., sil. 1.75 to 2.25	22.67
Granite City iron, sil. 1.75 to 2.25	22.31 to 22.81

Coke.—The St. Louis Coke & Iron Co. has increased its price on foundry coke 50c. a ton to $9.50, f.o.b. Granite City ovens, while the Warren Co. is still quoting $10, f.o.b. St. Louis. The demand for foundry grades continues excellent, and some increase is being shown in domestic coke.

Finished Iron and Steel.—The Missouri-Kansas-Texas Railway has asked for prices on 200,000 to 300,000 tie plates for delivery during the first quarter. The order for 6000 tons of reinforcing bars for sewer construction in Kansas City is expected to go to the Kansas City Bolt & Nut Co. The Laclede Steel Co. received orders for 125 tons of reinforcing bars for the Field House at Washington University and 75 tons

for an apartment house at Hamilton and Enright. Inquiries were issued for 450 tons of reinforcing bars for the Union National Bank, Wichita, Kansas, and 250 tons for the Eppley Hotel, Lincoln, Neb. Other lines are quiet.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.25c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, cold rolled, one pass, 4.50c.; galvanized sheets, No. 28, 5.50c.; black corrugated sheets, 4.65c.; galvanized, 5.65c.; cold-rolled rounds, shafting and screw stock, 3.70c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, ⅞ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, $3.50; hexagons, blank or tapped, $4 off list.

Old Material.—The market for old material is stronger, but that is due more to the strength shown in Chicago and Eastern markets than anything else. Consumers are buying very little. Dealers are showing faith in the market by buying all material offered at good prices and laying it down in their yards, although they have good stocks. Steel rails—rerolling and miscellaneous—specialties and malleable are the strongest items, while an improvement also is shown in rolling mill grades. Dealers are shipping some material to other markets.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

	Per Gross Ton	
Iron rails	$15.00 to	$15.50
Rails for rolling	19.25 to	19.75
Steel rails less than 3 ft.	19.00 to	19.50
Relaying rails, 60 lb. and under	24.00 to	25.00
Relaying rails, 70 lb. and over	31.00 to	33.00
Cast iron car wheels	18.50 to	19.00
Heavy melting steel	15.00 to	15.50
Heavy shoveling steel	15.00 to	15.50
Frogs, switches and guards cut apart	19.00 to	19.50
Railroad springs	19.50 to	20.00
Heavy axles and tire turnings	12.00 to	12.50
No. 1 locomotive tires	17.00 to	17.50

	Pet Net Ton	
Steel angle bars	16.00 to	16.50
Steel car axles	18.00 to	18.50
Iron car axles	25.00 to	25.50
Wrought iron bars and transoms	19.00 to	19.50
No. 1 railroad wrought	13.50 to	14.00
No. 2 railroad wrought	13.50 to	14.00
Cast iron borings	10.75 to	12.25
No. 1 busheling	11.50 to	12.00
No. 1 railroad cast	15.50 to	16.00
No. 1 machinery cast	17.00 to	17.50
Railroad malleable	14.50 to	15.00
Machine shop turnings	8.00 to	8.25
Champion bundled sheets	9.25 to	9.75

Cincinnati

Heavy Buying of Bars and Shapes at Price Dip—Wire Dull

CINCINNATI, Aug. 25.—A recession in pig iron activities has followed closely in the wake of the buying movement which had attained considerable proportions a week ago. Despite the lifeless condition of the market, prices have undergone no perceptible alteration. Northern iron in the Ironton district is showing strength at $19.50, furnace, and at least one producer is inclined to ask $20. Competition of Lake interests is being felt in this territory, although there was a noticeable relaxation in the pressure for business during the past week. With the exception of 1000 tons of foundry iron sold to an Ironton, Ohio, melter, movement of Northern iron has been restricted almost exclusively to single carloads. Interest has been created by the disposal of 100 tons of southern Ohio iron to a Georgia consumer. Present indications point to the stability of the $19.50, Ironton, price in the immediate future. Though the next change will undoubtedly be upward, it is not expected to materialize for some time. Alabama iron has been given an impetus by the sale of 1000 tons for shipment to southern Illinois. Local melters have taken two lots, totaling 225 tons. Prices are firm at $18.50, Birmingham, with no prospects of a departure from this level in the next few weeks. There is a paucity of orders in Tennessee iron, which is selling at $17.50, Birmingham. Silvery iron is eliciting slight interest, but furnaces are adhering more closely to their price schedules.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b Cincinnati:

Alabama, fdy., sil. 1.75 to 2.25 (base)	$22.55 to	$23.05
Alabama fdy., sil. 2.25 to 2.75	23.05 to	23.55
Tennessee fdy., sil. 1.75 to 2.25		21.55
Southern Ohio silvery, 8 per cent		28.27
Southern Ohio fdy., sil. 1.75 to 2.25		21.77
Southern Ohio, malleable	21.27 to	21.77

Bars, Plates and Shapes.—The price structure, which hitherto has shown stability at 2c., Pittsburgh, on bars and shapes, gave way rather unexpectedly during the past week because of the pressure exerted by consumers of important tonnages. Consequently, considerable business has been booked at 1.90c., Pittsburgh, although these orders were confined almost entirely to large buyers. Several sellers declare that their bookings during the past week have surpassed those of any week for a number of months. They assert that the records for August will reveal a better order book than any month this year. Included in the business taken in the past week were sizable orders from railroads and industrial concerns. Sellers predict that the price of 1.90c., Pittsburgh, on bars and shapes is destined to disappear shortly. In fact, a liberal portion of the orders are still bringing 2c., Pittsburgh. This particularly applies to single carloads, but in some instances lots up to 100 tons have been disposed of at this figure. Plates are steady rather than strong. The price of 1.90c., Pittsburgh, has become stronger, but large buyers can obtain their requirements at 1.85c., Cleveland. Slightly more activity is noted in the structural field.

Reinforcing Bars.—For the new warehouse of the Big Four Railroad at Dayton the Bourne-Fuller Co. will supply 100 tons. The Pollak Steel Co. has taken a like tonnage for the Ferro Concrete & Construction Co., Cincinnati. Little future business is in prospect and the dullness which has settled upon the market is expected to continue well into September. The price of new billet bars is 2c. to 2.10c., mill. Quotations on rail steel bars are steady at 1.90c., mill, although no important job has developed to test prices.

Wire Goods.—Lack of interest among buyers has tended to create a depressing situation. Independent producers have evidenced willingness to accept orders for common wire nails at 2.74c., delivered in Cincinnati, which is equivalent to 2.60c., Ironton, plus the barge rate to this market. Pittsburgh mills, in many instances, are holding to 2.65c., Pittsburgh, which, with a freight rate twice that of Ironton mills added, totals 2.94c., delivered here. It is not surprising, in view of the differential between the prices of Ironton and Pittsburgh mills, that the latter are experiencing difficulty in securing attractive tonnages for shipment into this territory. This peculiarly local situation on common wire nails is paralleled in plain wire. Producers in Ironton district, because of their proximity to this market, are enabled to undersell eastern mills, which are quoting 2.50c., Pittsburgh or Cleveland. Jobber buying is at a minimum. Orders for small lots are dribbling in, but they are inconsequential. Consumers persist in the policy of contracting only for immediate requirements. Buying is not expected to reach liberal proportions for another month.

Sheets.—Satisfactory tonnages have been booked in the past week and sellers are confident that total sales for the month will attain respectable dimensions. The bulk of the orders continues to center about small lots for prompt delivery. Indication of increased production is given by the inability of mills to promise shipment as early as they would several weeks ago. Galvanized sheets have been established firmly on the basis of 4.30c., Pittsburgh. It is only in isolated cases that a lower figure prevails. The Newport Rolling Mill Co. has announced that while it is accepting orders for prompt shipment at 4.30c., Pittsburgh, its price on fourth quarter business is 4.40c., Pittsburgh. Demand for galvanized sheets has improved, due to the anticipation of consumers that the roofing business in the

fall will be extensive. Stove companies are still well taken care of on their black sheet requirements, but they are moving more stock from their warehouses than they have for several months. Prices of black sheets are steady at 3.15c., Pittsburgh. Quietness has permeated the blue annealed market. Quotations are firm at 2.30c., Pittsburgh. Perceptible improvement has taken place in auto sheets, although business is restricted by the limitations of this territory. The price remains at 4.25c., Pittsburgh.

Warehouse Business.—Although sales have dropped off to a limited extent this month, they have been above normal for mid-summer, according to leading jobbers. Indications point to liberal consumer buying in the next few weeks. Pick-up in activities of local machine tool manufacturers is reflected in the increased demand for cold-rolled products. Structural steel sales are maintaining a steady pace, but orders for reinforcing bars have fallen off. Consumers are displaying only slight interest in wire goods. Prices are strong.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4c. to 4.25c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.85c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c.; No. 28 galvanized sheets, 5.25c.; No. 9 annealed wire, $3 per 100 lb.; common wire nails, $2.95 per keg base; cement coated nails, $2.40 per keg; chain, $7.55 per 100 lb. base; large round head rivets, $3.75 base; small rivets, 65 per cent off list. Boiler tubes: prices net per 100 ft. lap welded steel tubes, 2-in., $18; 4-in., $38; seamless, 2-in., $19; 4-in., $39.

Coke.—By-product foundry coke is being shipped at a fair rate, according to local dealers. Domestic grades are showing marked improvement. Sales in this territory have approximated 7000 tons in the past week. A local seller has booked a 1500-ton order for foundry coke for delivery during the next four months. Curtailment of furnace operations in the Ironton district has forced nearby coke producers to seek other outlets and considerable tonnage is now going into Michigan. Prices are displaying strength, but remain unchanged.

Old Material.—While mill operations have increased slightly, demand for scrap has not justified the rush of dealer buying which occurred in the past few weeks. Consequently activities have temporarily receded and dealers are marking time until mills are ready to purchase more material. Prices have not been affected by the present lull and heavy melting steel is firm at $15 to $15.50. Some of the tonnage offered by the Louisville & Nashville Railroad last week was taken by local dealers.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel	$15.00	to $15.50
Scrap rails for melting	14.50	to 15.00
Short rails	18.50	to 19.00
Relaying rails	28.00	to 28.50
Rails for rolling	15.50	to 16.00
Old car wheels	14.00	to 14.50
No. 1 locomotive tires	17.00	to 17.50
Railroad malleable	16.00	to 16.50
Agricultural malleable	15.50	to 16.00
Loose sheet clippings	10.50	to 11.00
Champion bundled sheets	12.00	to 12.50
	Per Net Ton	
Cast iron borings	9.00	to 9.50
Machine shop turnings	8.00	to 8.50
No. 1 machine cast	19.00	to 19.50
No. 1 railroad cast	15.50	to 16.00
Iron axles	23.00	to 23.50
No. 1 railroad wrought	12.00	to 12.50
Pipes and flues	9.00	to 10.00
No. 1 busheling	11.00	to 11.50
Mixed busheling	9.50	to 10.00
Burnt cast	10.00	to 10.50
Stove plate	11.00	to 11.50
Brake shoes	11.00	to 11.50

An order for 3500 tons of ship plates was received last week by a Youngstown independent steel maker, the first of its kind taken by this company since the war. The tonnage was placed by the Mather iron ore interests of Cleveland for two ore boats. Because of the scarcity of ship plate business, the order created more than ordinary comment.

Boston

Pig Iron Sales the Past Week Approximated 10,000 Tons

BOSTON, Aug. 25.—Pig iron sales in this territory the past week approximated 10,000 tons, not including one lot of 2500 tons fourth quarter iron taken by the Connecticut Foundry Co. and smaller tonnages by Connecticut foundries through New York pig iron houses. With the exception of one 1000-ton lot of No. 2X Buffalo iron at $19 furnace and two or three smaller tonnages for first quarter, 1926, all iron sold the past week was for last quarter delivery. Competition for business here still lies chiefly between Buffalo district furnaces and foreign iron. Scheduled receipts of foreign iron this week are heavier than usual. While Buffalo furnaces are getting some business on a basis of $19 furnace for No. 2 plain with 50c. differentials, they appear willing to omit differentials on No. 2X where the tonnage is large, and $18.50 for No. 2 plain and No. 2X can still be done with at least one furnace. Although not openly quoted as low, it is intimated that Continental No. 2 plain, No. 2X and No. 1X is obtainable at $20 on dock duty paid. Dutch iron, however, is quoted at $22 on dock duty paid, while the lowest price paid recently for India iron was $21 on dock duty paid for No. 2 plain. There is hardly enough doing in eastern Pennsylvania, Virginia and Alabama irons to constitute a market.

We quote delivered prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$23.90	to $24.65
East. Penn., sil. 2.25 to 2.75	24.40	to 25.15
Buffalo, sil. 1.75 to 2.75	23.41	to 23.91
Buffalo, sil. 2.25 to 2.75	23.91	to 24.41
Virginia, sil. 1.75 to 2.25	27.92	to 28.92
Virginia, sil. 2.25 to 2.75	28.42	to 29.42
Alabama, sil. 1.75 to 2.25	28.10	to 28.60
Alabama, sil. 2.25 to 2.75	28.60	to 29.10

Cast Iron Pipe.—The Warren Foundry & Pipe Co. took most of the large pipe business on the market the past week, including 8500 tons of 60-in. pipe and specials for Lynn, Mass., and 700 tons 42-in. pipe for Providence, R. I. The Lynn business is the largest placed in this territory in three years. Three years ago New Bedford, Mass., bought 9200 tons of 48-in. pipe from the same foundry, the record order. Numerous smaller orders have been placed with the Warren Foundry & Pipe Co. and other pipe makers. French pipe interests failed to submit a bid on the Lynn business. Prices quoted locally on domestic cast iron pipe follow: 4-in., $60.10 a ton delivered common Boston freight rate points; 6-in. to 16-in., $56.10; 20-in. and larger, $55.10. The usual $5 differential on Class A and gas pipe is demanded.

Coke.—Following closely the advance of 50c. a ton on by-product foundry coke by New England makers to $12 a net ton delivered where the freight rate does not exceed $3.10, comes the announcement that crushed coke is 50c. a ton higher at $8.75 a ton at ovens. The uplift in foundry coke prices has failed to check specifications against last half contracts, which are running 60 per cent to 70 per cent ahead of last month. August gives indication of being the biggest month experienced this year by both the New England Coal & Coke Co. and the Providence Gas Co. on foundry coke. Connellsville foundry coke is in increasing demand from large fuel users because of the disparity of prices for it and for the local product. Numerous sales of Connellsville fuel were made the past week at $10.85 a ton delivered.

Old Material.—Machine shop turnings, mixed borings and turnings, cotton ties and rails for rerolling are a shade firmer in price without any appreciable increase in the movement of these materials out of New England. In fact, actual transactions in old material are less than they were a week ago. Dealers are inquiring on prices more frequently than heretofore, but largely for the purpose of sounding out the market. Shippers are of the opinion, however, that

scrap will be in larger supply within the near future because of the increasing industrial activities in New England. For machine shop turnings no sale at less than $9.25 a ton on cars is reported. Cotton ties are perhaps a shade more active around $9.20 for long bundles and at $10.20 for short. A Portland, Me., consumer has been taking some shafting on a basis of $19.50 on cars shipping point, but the market for eastern Pennsylvania consumption is dull. Most of the heavy melting steel bought in this market recently was for Bridgeport, Conn., use, on a basis of $11.75 on cars shipping point, contrasted with $11.10 a week or so ago. Heavy melting steel for Pennsylvania consumption is generally $12.50 to $13 on cars.

The following prices are for gross ton lots delivered consuming points:

Textile cast	$20.00 to $21.00
No. 1 machinery cast	19.00 to 19.50
No. 2 machinery cast	15.50 to 16.50
Stove plates	13.50 to 14.00
Railroad malleable	19.00 to 19.50

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$12.50 to $13.00
No. 1 railroad wrought	13.00 to 13.50
No. 1 yard wrought	12.00 to 12.50
Wrought pipe (1 in. in diam., over 2 ft. long)	11.50 to 12.00
Machine shop turnings	9.00 to 9.50
Cast iron borings, chemical	11.00 to 11.50
Cast iron borings, rolling mill	8.50 to 9.00
Blast furnace borings and turnings	8.00 to 8.50
Forged scrap	9.50 to 10.50
Bundled skeleton, long	9.50 to 10.00
Forged flashings	10.00 to 10.50
Bundled cotton ties, long	8.75 to 9.25
Bundled cotton ties, short	10.00 to 10.50
Shaftings	19.00 to 19.50
Street car axles	18.00 to 18.50
Rails for rerolling	13.00 to 13.50
Scrap rails	12.50 to 13.00

Cleveland

Pig Iron Active and Strong — Fourth Quarter Steel Inquiries

CLEVELAND, Aug. 25.—The price situation in finished steel is rather unsettled. The weakness that has appeared in steel bars and structural material has extended to this market. After some of the automobile companies had covered at 1.90c. six weeks ago, mills had held pretty firmly to 2c. on steel bars in spite of continued efforts of consumers to break that price. The lower prices have appeared in spite of considerable improvement in the demand during the past month. While large lots of steel bars can be bought at 1.90c., some of the mills still are holding to 2c. and are making small lot sales at that price. Buyers are doing considerable shopping around for the concessions and some having contracts are asking for a price revision on these to 1.90c. The structural material price situation is virtually the same as the steel bar situation, the 2c. price applying mainly to small lots. Plates range from 1.80c. to 1.90c. The former price has become more common for good size lots and buyers of small lots are trying to secure the same price but without much success. New demand for steel is keeping up at about the recent volume with buying confined to small lots for early needs. Some inquiry has come out for contracts for steel bars, plates and structural material for the fourth quarter but these are generally regarded as market feelers. Another lull has developed in the building field with no lettings or inquiries of any size during the week. A ferry boat placed in Detroit will require 450 tons of plates. The Seaboard Air Line Railroad is inquiring for 10 locomotives.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 3.90c.; No. 28 galvanized sheets, 5.10c.; No. 10 blue annealed sheets, 3.10c.; cold-rolled rounds and hexagons, 3.80c.; flats and squares, 4.30c.; hoops and bands, 3.85c.; No. 9 annealed wire, $3 per 100 lb.; No. 9 galvanized wire, $3.45 per 100 lb.; common wire nails, $3 base per 100 lb.

Pig Iron.—Efforts of some of the Lake furnaces to get higher prices in certain sections out of the competitive range of the Valley district as reported a week ago have proved successful and these furnaces now have made definite price advances of 50c. to $1 a ton. Detroit furnaces have marked their prices up $2 a ton to $21, and another Lake furnace has made a $1 advance for the Michigan territory, so that while the advance has not yet been well tested, the market appears to be pretty well established at $20 throughout Michigan. Prices in western Ohio and in eastern Indiana have been advanced 50c. a ton, to $19.50, by Lake furnaces that serve that territory. Some business has been taken at the advance but other sales were lost because of the higher quotation. In the Valley district the price is unchanged at $18.50 but producers are talking of a 50c. advance. One Cleveland producer is holding to $19 for outside shipment. For Cleveland delivery the price is unchanged at $19.50 at furnace. The market showed considerable increase in activity during the week. Sales made by two leading producers aggregated 50,000 tons, all for the fourth quarter in lots up to 5000 tons and including several lots of 1000 to 2000 tons. The greatest amount of activity was in Michigan, where considerable business was placed by both automobile and other industries. One producer still has active inquiries for 8000 tons for the fourth quarter. No sales for the first quarter have been made as yet. Furnaces that would take on business for that delivery would not do so at present prices and consumers are not disposed to pay more. A sale of basic iron is reported at somewhat higher than $18, Valley furnace, but the seller had the advantage of freight differential. Basic iron is still quoted at $18, although that price might not bring out a large tonnage.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 from Birmingham:

Basic, Valley furnace	$18.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	20.00
Southern fdy., sil. 1.75 to 2.25	$23.51 to 26.01
Malleable	20.00
Ohio silvery, 8 per cent	29.02
Standard low phos., Valley furnace	27.50 to 28.00

Iron Ore.—Consumption of Lake Superior ore during July amounted to 3,842,351 tons, a decrease of 20,602 tons from June. The amount consumed in July last year was 2,415,300 tons. Ore on hand at furnaces Aug. 1 was 24,719,905 tons. The amount at furnaces and Lake Erie docks Aug. 1 was 30,332,260 tons as compared with 31,595,562 tons on Aug. 1 last year. On July 31 there were 159 furnaces in blast consuming Lake ore, or the same number as on June 30. A few sales in small lots were made during the week. It seems to be the disposition of many furnaces to purchase only ore they need for early requirements.

Semi-Finished Steel.—A northern Ohio sheet mill reports the purchase of sheet bars at $33.50, Youngstown, but leading producers deny that they have shaded the $35 price, although in view of the fact that slabs have sold at $32, the lower price looks more in line with the market situation.

Sheets.—There is still a spread in price owing to the fact that a number of independent mills have not followed others in the price advance. In addition weak spots have appeared in the black sheet market with quotations of 3.10c., although 3.15c. is the more common price. Some of the mills have opened their books for fourth quarter contracts at 3.15c. for black and 4.30c. for galvanized sheets, but the latter are selling at 4.20c. for early shipment. On blue annealed sheets 2.25c. is the more common price.

Alloy Steel.—Although the tonnage on their books is not so large as a few weeks ago, mills still have well filled order books. The market lacks strength and the minimum prices given on page 579 have become the more common quotations. In addition quotations on a mill instead of Pittsburgh basis have become more frequent.

Strip Steel.—New demand for hot rolled strip steel is light. Regular prices are well maintained, although a manufacturer of cold rolled steel is reported to have been able to secure some concessions on a round lot. Cold rolled strip steel is in good demand in the automotive industry and firm at 3.75c., Cleveland.

Reinforcing Bars.—New demand is fair but the market lacks strength. Rail steel bars are commonly

quoted at 1.80c. for small lots and 1.75c. for round lots. The Paterson-Leitch Co. has taken 300 tons for the Greeley Warehouse, Cleveland, and the Concrete Steel Co., 100 tons for a building for the Ohio Bell Telephone Co., Cleveland. Inquiries include a 300-ton lot for a warehouse for Malbin Brothers, Cleveland.

Bolts, Nuts and Rivets.—Specifications on contracts for bolts and nuts in the automotive industry continue fairly heavy but new buying is light. Prices are firm. Rivets are quiet. On large rivets $2.50 now appears to represent the top of the market with some quotations as low as $2.35.

Coke.—The foundry coke market is firmer. Some makers that have been on a $4.25 basis have advanced prices 25c. a ton. The range is still from $4.25 to $5 for Connellsville foundry coke. Buying is largely from hand to mouth.

Old Material.—The market has a weaker tendency because of the absence of a consumer demand and the refusal of mills and blast furnaces to pay present prices. Not only have dealers covered against their short sales but many are now "long" on scrap and are more inclined to sell than buy. The present week is expected to show a more definite market trend either through a firmer situation or through lower prices. A weakness is more marked in blast furnace scrap than other grades, borings and turnings having declined 25c. a ton. Scrap lists covering their September production have been issued by some of the Detroit automobile companies. These include the Chrysler Corporation, 2000 tons; Hudson Motor Car Co., 3000 tons, and Dodge Brothers, 2300 tons.

We quote dealers' prices f.o.b. Cleveland per gross ton.

Heavy melting steel	$17.00 to $17.50
Rails for rolling	17.00 to 17.50
Rails under 3 ft	19.00 to 19.50
Low phosphorus melting	18.00 to 18.25
Cast iron borings	14.00 to 14.50
Machine shop turnings	14.00 to 14.50
Mixed borings and short turnings	14.00 to 14.50
Compressed sheet steel	15.75 to 16.00
Railroad wrought	13.50 to 14.00
Railroad malleable	18.50 to 19.00
Light bundled sheet stampings	12.25 to 12.75
Steel axle turnings	15.50 to 16.00
No. 1 cast	18.00 to 18.50
No. 1 busheling	14.25 to 14.75
Drop forge flashings	13.00 to 13.50
Railroad grate bars	13.50 to 13.75
Stove plate	13.50 to 13.75
Pipes and flues	12.00 to 12.25

Philadelphia

Lack of Railroad Demand Holds Back Anticipated Expansion of Trade

PHILADELPHIA, Aug. 25.—Signs of expansion of iron and steel demand are lacking, and unless there is shortly a considerably increased demand from the railroads, some of the estimates of fall steel business will have to be revised. The lack of interest on the part of the railroads is a disappointment to the steel companies. Not only are there no important inquiries for equipment, but the ordinary, month-to-month requirements of the roads have been kept at a very low point. July and August specifications from all of the Eastern and Southern roads have been much lower than usual monthly purchases and purchasing departments admit that a policy of limited buying has been ordered by operating executives. The rush character of some of the railroad orders shows clearly that repair shops are almost barren of stocks. It is believed in the steel trade that railroad buying on a larger scale will be resumed in September, but there is as yet no sound basis for this optimism beyond the reasoning that a starvation buying policy can not be pursued for long.

Surprisingly little concern is being exhibited over the anthracite mining suspension scheduled for the end of the month. Aside from the strengthening in coke prices, there has been no appreciable effect and consumers seem content to await developments. The assurance that there are ample stocks of anthracite coal and still larger supplies of bituminous coal and coke available has quieted whatever apprehensions may have existed a few weeks ago.

Business in the principal lines—finished steel, pig iron and scrap—has been in smaller volume in the past week than during the first half of the month. The lull is generally ascribed to the prevalence of vacation-taking in the latter half of August. There is the optimism usually to be found at this time of year that Labor Day will bring a freshened demand.

Pig Iron.—While pig iron holds the strength it has gained, efforts to advance prices further have not been successful. Some have tried to obtain $21, furnace, for No. 2 plain and $21.50 for No. 2X, but it is apparent that when foreign iron is still obtainable at $20 to $20.50, c.i.f. Philadelphia, duty paid, consumers will not pay these prices, except perhaps for such small lots as a carload. The only important inquiry in the market is from the J. L. Mott Iron Works, Trenton, N. J., calling for 2000 tons for delivery over the remainder of the year. This may afford a test of prices. Although coke has stiffened in price, pig iron melters do not seem alarmed that there will be any marked effect on the pig iron situation from the anthracite coal suspension, or at least they seem content to wait until after Sept. 1 to see what happens. Some of the Indian basic pig iron now coming in at this port is consigned to a nearby steel company. Sales of English and Continental irons are not important, but a good business is being done in Indian foundry grades, due to the low prices at which the latter can be sold.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rate varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$21.26 to $21.63
East. Pa. 2X, 2.25 to 2.75 sil.	21.76 to 22.13
East. Pa. No. 1X	22.26 to 22.63
Virginia No. 2 plain, 1.75 to 2.25 sil.	28.67 to 29.17
Virginia No. 2X, 2.25 to 2.75 sil.	29.17 to 29.67
Basic delivery eastern Pa.	20.50 to 21.50
Gray forge	21.00 to 22.00
Malleable	22.00 to 22.50
Standard low phos. (f.o.b. furnace)	22.00 to 23.00
Copper bearing low phos. (f.o.b furnace)	22.50 to 23.50

Ferroalloys.—The ferromanganese situation is unchanged. Demand is limited to small lots for prompt shipment. The price is still $115, seaboard or furnace.

Billets.—An inquiry for 500 tons of billets from a local manufacturer may test current prices, which have held at $35 for rerolling quality and at $40 for forging quality despite the willingness of some mills to grant concessions on desirable business.

Plates.—There is a little weakness in the price of plates, sales having been made in a few special cases at 1.75c., Pittsburgh, but 1.80c. is being quoted on the general run of inquiries. Orders in total volume are about keeping even with recent business, but there is no gain, due principally to the small specifications from the railroads. August is said to be the poorest month in railroad orders for plates this year.

Structural Material.—The Austin Co. will furnish the steel and erect building No. 2 for the Sesqui-Centennial Exposition, but no decision has been reached on building No. 1. Each of these buildings has about 3500 tons of steel. No award has been made of the 12,000 tons for the Broad Street subway. A fair volume of work is in prospect. Shapes are quoted at a range of prices. Some Eastern mills occasionally quote 2c. to 2.10c., mill, but Pittsburgh mills and one large Eastern producer name 1.90c. to 2c., Pittsburgh.

Bars.—Some mills are quoting 1.90c., Pittsburgh, on steel bars to special customers or on very desirable specifications, but a large percentage of sales, it is stated, is still at 2c. Bar iron has weakened slightly and is available from some mills at 2.12c., Philadelphia, with others still quoting 2.17c. or 2.22c.

Sheets.—Many of the independent mills are sticking firmly to 4.30c., Pittsburgh, on galvanized sheets and to 3.20c. on black, but the leading interest is quoting 4.20c. on galvanized and 3.15c. on black. One mill offers August-September delivery of galvanized at

4.20c. and October delivery at 4.30c. The range on blue annealed is still 2.25c. to 2.30c., Pittsburgh.

Warehouse Business.—Philadelphia jobbers have succeeded in raising the prices on some items and this week there appears to be a fairly rigid adherence to 3.20c. on bars, 2.80c. on plates and 2.90c. on shapes. Hoops and bands have also been advanced. We quote for local delivery as follows:

Soft steel bars and small shapes, 3.20c.; iron bars (except bands), 3.20c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 2.80c.; tank steel plates, ⅜ in., 3c.; blue annealed steel sheets, No. 10 gage, 3.35c.; black sheets, No. 28 gage, 4.35c.; galvanized sheets, No. 28 gage, 5.45c.; square, twisted and deformed steel bars, 3c.; structural shapes, 2.90c.; diamond pattern plates, ¼-in., 5.30c.; ⅜-in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 4c.; squares and flats, cold-rolled steel, 4.50c.; steel hoops, 4.25c. base; steel bands, No. 12 gage to ⅞ in., inclusive, 3.90c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

Imports.—Pig iron imports last week were 3866 tons from India and 100 tons from Luxemburg. Other imports were: Chrome ore from Portuguese Africa, 2625 tons; ferromanganese from England, 250 tons; structural steel from Germany, 82 tons; structural steel from Belgium, 122 tons; rolled iron from Sweden, 26 tons; wire rods from Luxemburg, 150 tons.

Old Material.—Scrap brokers point out that it is more and more difficult to buy scrap except at prices which are higher than consumers will pay. Therefore the market is largely a waiting affair—waiting, that is, for consumers to make up their minds to pay more. An Eastern steel company last week bought 5000 tons of heavy melting steel at $16.50. Another steel company paid $15 for stove plate and grate bars, an advance of 50c. per ton. With one or two exceptions prices have remained as quoted a week ago. The underlying confidence of scrap dealers is borne out by the high prices which are being paid to the railroads for their offerings.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$16.50 to $17.50
Scrap rails	16.50 to 17.50
Steel rails for rolling	18.50 to 19.00
No. 1 low phos. heavy 0.04 and under	21.50 to 22.00
Couplers and knuckles	21.00 to 21.50
Rolled steel wheels	21.00 to 21.50
Cast iron car wheels	18.50 to 19.00
No. 1 railroad wrought	17.50 to 18.50
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	15.00 to 15.50
Bundled sheets (for steel works)	14.00 to 14.50
Mixed borings and turnings (for blast furnace use)	12.50 to 13.50
Machine shop turnings (for steel works use)	14.00 to 14.50
Machine shop turnings (for rolling mill use)	14.50 to 15.00
Heavy axle turnings (or equivalent)	15.50 to 16.00
Cast borings (for steel works and rolling mill)	14.00 to 14.50
Cast borings (for chemical plant)	16.00 to 16.50
No. 1 cast	18.00 to 18.50
Heavy breakable cast (for steel plants)	17.00 to 17.50
Railroad grate bars	15.00
Stove plate (for steel plant use)	15.00
Wrought iron and soft steel pipes and tubes (new specifications)	16.50 to 17.00
Shafting	24.00 to 25.00
Steel axles	24.50 to 25.00

Check to Consumption of Detroit Scrap

DETROIT, Aug. 25.—The holding up of shipments on machine shop turnings by one of the largest consumers of this material in Ohio has reacted as a brake on the Detroit scrap market, and this material showed a decline of 50c. per ton during the week. Some other mills that have been looked for to come into the market have withheld their purchases.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$14.50 to $15.00
Borings and short turnings	11.75 to 12.25
Long turnings	11.25 to 11.75
No. 1 machinery cast	15.00 to 16.00
Automobile cast	21.00 to 22.00
Hydraulic compressed	13.75 to 14.25
Stove plate	12.50 to 13.00
No. 1 busheling	12.75 to 13.25
Sheet clippings	9.00 to 10.00
Flashings	12.00 to 12.50

Chicago Iron and Steel Market

(*Concluded from page 569*)

$16.75 delivered, and brokers are commonly paying $17. In fact, when the speculative element is involved, as in the case of railroad material on which deliveries will not be made for 30 or 60 days, as high as $18 has been paid. Consumer interest is not generally so manifest as in recent weeks, but such purchases as are made are usually at advanced quotations. Moreover, prompt delivery is invariably asked, indicating that users' stocks are bare. Cast scrap has shown strength and in a number of instances No. 1 machinery has brought as much or more than pig iron. While there are no indications of weakness in the market, it is felt in some quarters that the advance has been overdone and that a reaction is near at hand. Railroad offerings include the Burlington, 6100 tons, and the Baltimore & Ohio Chicago Terminal, 600 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

	Per Gross Ton	
Iron rails	$17.50 to	$18.00
Cast iron car wheels	17.50 to	18.00
Relaying rails, 56 lb. to 60 lb.	25.00 to	26.00
Relaying rails, 65 lb. and heavier	26.00 to	31.00
Forged steel car wheels	20.00 to	20.50
Railroad tires, charging box size	20.50 to	21.00
Railroad leaf springs, cut apart	20.50 to	21.00
Rails for rolling	19.50 to	20.00
Steel rails, less than 3 ft.	21.00 to	21.50
Heavy melting steel	16.75 to	17.00
Frogs, switches and guards, cut apart	18.25 to	18.75
Shoveling steel	16.50 to	16.75
Drop forge flashings	12.00 to	12.50
Hydraulic compressed sheets	14.50 to	15.00
Axle turnings	14.50 to	15.00
Steel angle bars	20.00 to	20.50
Steel knuckles and couplers	20.00 to	20.50
Coil springs	20.50 to	21.00
Low phos. punchings	19.00 to	19.50
Machine shop turnings	10.50 to	11.00
Cast borings	13.50 to	14.00
Short shoveling turnings	13.50 to	14.00
Railroad malleable	19.50 to	20.00
Agricultural malleable	18.50 to	19.00
Per Net Ton		
Iron angle and splice bars	18.00 to	18.50
Iron arch bars and transoms	21.25 to	21.75
Iron car axles	27.50 to	28.00
Steel car axles	17.50 to	18.00
No. 1 busheling	13.50 to	14.00
No. 2 busheling	9.50 to	10.00
Pipes and flues	11.50 to	12.00
No. 1 railroad wrought	16.75 to	17.25
No. 2 railroad wrought	15.00 to	15.25
No. 1 machinery cast	18.00 to	18.50
No. 1 railroad cast	17.50 to	18.00
No. 1 agricultural cast	17.00 to	17.50
Locomotive tires, smooth	16.50 to	17.00
Stove plate	15.50 to	16.00
Grate bars	15.50 to	16.00
Brake shoes	15.50 to	16.00

Bolt and Nut Companies Merge

The Hoopes & Townsend Corporation, as noted in these columns Aug. 13, has taken over the following manufacturing plants: Hoopes & Townsend Works, 1330 Buttonwood Street, Philadelphia; Bayonne Bolt & Nut Works, Bayonne, N. J.; Standard Bolt & Nut Works, Columbus, Ohio; Michigan Bolt & Nut Works, foot of Meldrum Avenue, Detroit; Boss Bolt & Nut Works, 3403 West Forty-seventh Street, Chicago. All of these plants, with the exception of the Hoopes & Townsend plant, were merged in January, 1923, as the American Bolt Corporation. Later Justin C. Burns, president of the American Bolt Corporation, personally obtained control of the Hoopes & Townsend Co., Philadelphia, and the formation of the Hoopes & Townsend Corporation is merely a move on the part of Mr. Burns and his associates to put all of their interests under one head.

Headquarters of the Hoopes & Townsend Corporation will be at 1330 Buttonwood Street, Philadelphia, but the secretary-treasurer, Harley E. Burns, remains at Columbus, Ohio.

Each division will continue to handle its own sales. The Bayonne Bolt & Nut Works will maintain a sales office at 1011 Whitehall Building, New York, and this office will handle the export business of the corporation.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....1.80c. to 1.90c.
F.o.b. Chicago, base, per lb.....2.10c.

Structural Shapes

F.o.b. Pittsburgh mill, base, per lb.....1.90c. to 2c.
F.o.b. Chicago, base, per lb.....2.10c.

Iron and Steel Bars

Soft steel bars, f.o.b. P'gh mills, base, per lb.....1.90c. to 2c
Soft steel bars f.o.b. Chicago, base, per lb.....2.10c.
Reinforcing steel bars f.o.b. P'gh mills, per lb...1.90c. to 2c.
Rail steel bars, f.o.b. Chicago and f.o.b. Chicago district mills, base, per lb.....2.00c.
Common iron bars, f.o.b. Chicago, base, per lb..1.90c. to 2.00c.
Refined iron bars, f.o.b. P'gh mills, base, per lb.....3.00c.
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

Hot-Rolled Flats

Hoops, base (6 in. and narrower), per lb., Pittsburgh.2.40c.
Bands, base (6 in. and narrower), per lb., Pittsburgh.2.40c.
Strips, 6 in. and narrower, base, per lb., Pittsburgh.....2.40c.
Strips, wider than 6 in, base, per lb., Pittsburgh.....2.20c.
Strips, 6 in. and narrower, Chicago.....2.40c. to 2.50c.
Strips, wider than 6 in., Chicago.....2.30c. to 2.40c.
Cotton ties, per 45 lb. bundle, f.o.b. Atlantic ports.....$1.28
Cotton ties, per 45 lb. bundle, f.o.b. Gulf ports..... 1.25

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'hg mills, base, per lb., 2.50c.
Screw stock and shafting, f.o.b. Chicago, base, per lb..2.50c.
Screw stock, base, per lb., Cleveland.....2.55c.
Shafting, ground, f.o.b. mill, base, per lb.....3.00c.
Strips, f.o.b. P'gh mills, base, per lb.....3.75c.
Strips, f.o.b. Cleveland mills, base, per lb.....3.75c.
Strips, f.o.b. delivered Chicago, base, per lb.....4.05c.
Strips, f.o.b. Worcester mills, base, per lb.....3.90c.

Wire Products

(To jobbers in car lots f.o.b Pittsburgh and Cleveland)

Nails, base, per keg.....$2.65
Galvanized nails, 1-in. and longer, base plus..... 2.00
Galvanized nails, shorter than 1 in., base plus..... 2.25
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.50
Annealed fence wire, base, per 100 lb..... 2.65
Spring wire, base, per 100 lb..... 3.50
Galvanized wire, No. 9, base, per 100 lb..... 3.10
Galvanized barbed, base, per 100 lb..... 3.35
Galvanized staples, base, per keg..... 3.35
Painted barbed wire, base, per 100 lb..... 3.10
Polished staples, base, per keg..... 3.10
Cement coated nails, base, per count keg..... 1.85
*Bale ties, carloads, to jobbers....75, 15 and 5 per cent off list
*Bale ties, carloads, to retailers..75, 10 and 6 per cent off list
Woven wire fence, base, per net ton to retailers.....$65

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant, and Duluth, Minn., mills $2 a ton higher; Anderson, Ind., $1 higher.

*F.o.b. Cleveland.

Sheets

Blue Annealed
(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....2.30c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills, 2.40c. to 2.45c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.15c. to 3.20c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.30c. to 3.35c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh.....4.20c. to 4.30c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.4.35c. to 4.40c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh.....3.15c. to 3.20c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.25c. to 3.40c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. Pittsburgh.....4.25c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill..4.60c. to 4.75c.

Tin Plate

Standard cokes, per base box, f.o.b. Pittsburgh district mills.....$5.50
Standard cokes per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind..... 5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base $11.20	20-lb. coating I. C....$15.50
8-lb. coating I. C.... 11.50	25-lb. coating I. C.... 17.00
15 lb. coating I.C.... 14.35	30-lb. coating I. C.... 18.35
	40-lb. coating I. C.... 20.35

Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb., $2.40 to $2.50
Large, f.o.b. Chicago, base, per 100 lb..... 2.50 to 2.60
Small, f.o.b. Pittsburgh.....70, 10 and 5 per cent off list
Small, Cleveland ....70 and 10 to 70, 10 and 10 per cent off list
Small, Chicago .....70, 10 and 5 per cent off lirt

Rails and Track Equipment

(F.o.b.)

Rails, standard, per gross ton.....$43.00
Rails, light, billet, base, per lb.....1.60c. to 1.70c.
Rails, light rail steel, base, per lb.....1.50c. to 1.60c.
Spikes, ½ in. and larger, base, per 100 lb.....$2.80 to $3.00
Spikes, ½ in. and smaller, base, per 100 lb.....3.00 to 3.25
Spikes, boat and barge, base, per 100 lb..... 2.25
Track bolts, all sizes, base, per 100 lb..... 3.90 to 4.25
Tie plates, per 100 lb..... 2.35 to 2.40
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	⅛ to ⅜....+11		+39
¼ to ⅜.....	51	25½	½	22	2
⅞	56	42½	¾	28	11
½	60	48½	1 to 1½.....	30	13
¾	62	50½			
1 to 3.....					

Lap Weld

2	55	43½	2	23	7
2½ to 6.....	59	47½	2½	26	11
7 and 8.....	56	43½	3 to 6.....	28	13
9 and 10....	54	41½	7 to 12.....	26	11
11 and 12...	53	40½			

Butt, Weld, extra strong, plain ends

⅛	41	24½	2 to 3.....	61	50½
¼ to ⅜....	47	30½	¼ to ⅜.....+11		+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½.....	60	49½	1 to 1½.....	30	14

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4.....	57	46½	2½ to 4.....	29	15
4½ to 6.....	56	45½	4½ to 6.....	28	14
7 to 8.....	52	39½	7 to 8.....	21	7
9 and 10.....	45	32½	9 to 12.....	16	2
11 and 12....	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1½ points, with supplementary discount of 5 per cent. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2½ per cent beyond the above discount.

NOTE—The above discounts on steel pipe also apply at Lorain Ohio. Chicago district mills have a base 2 points less. Chicago delivered base 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.....	27	1½ in.....+18	
2½ to 2¾ in.....	37	1¾ to 1⅞ in.....+ 8	
3 in.	40	2 to 2¼ in.....— 2	
3¼ to 3¾ in.....	42½	2½ to 3 in.....— 7	
4 to 13 in.....	46	3¼ to 4½ in.....— 9	

Beyond the above discounts, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes
Cold Drawn

1 in.	60	3 in.	45
1¼ and 1½ in.....	52	3¼ to 3½ in.....	47
1¾ in.	36	4 in.	50
2 to 2¼ in.....	31	4½, 5 and 6 in.....	45
2½ and 2¾ in.....	39		

Hot-Rolled

2 and 2¼ in.....	34	3¼ to 3½ in.....	50
3½ and 2¾ in.....	42	4 in.	53
3 in.	48	4½, 5 and 6 in.....	48

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing (Old List)

Carbon under 0.30 base.....86 to 88 per cent off list
Carbon 0.30 to 0.40 base.....84 to 86 per cent off list

Plus usual differentials and extra for cutting. Warehouse discounts range higher.

Seamless Mechanical Tubing (New List)

Carbon 0.10 to 0.30 base.....55 per cent off list
Carbon 0.30 to 0.40 base.....50 per cent off list

Plus differentials for lengths over 18 ft. and for commercially exact lengths.

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 51.50 per cent iron	$4.55
Old range non-Bessemer, 51½ per cent iron	4.40
Mesaba Bessemer, 51.50 per cent iron	4.40
Mesaba non-Bessemer, 51.50 per cent iron	4.25
High phosphorus iron, 51.50 per cent	4.15

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus	45c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	$12.00 to $13.00
Chrome ore, Indian basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f., Atlantic seaboard	20.50 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	65c. to 70c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt	$3.25
Foundry coke, f.o.b. Connellsville prompt	$4.00 to 4.50
Mine run steam coal, f.o.b. W. Pa. mines	1.50 to 2.00
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.75
Mine run gas coal, f.o.b. W. Pa. mines	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines	1.35 to 1.40
Gas slack, f.o.b. W. Pa. mines	1.40 to 1.60

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid	115.00
Ferrosilicon, 50 per cent, delivered	82.50 to 85.00
Ferrosilicon, 75 per cent	145.00 to 147.50
Ferrotungsten, per lb. contained metal	1.10 to 1.20
Ferrochromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.....$32.00
Spiegeleisen, domestic, 16 to 19 per cent..... 31.00
Ferrosilicon, Bessemer, 10 per cent, $33; 11 per cent, $35; 12 per cent, $37; electric furnace ferrosilicon, 10 per cent, $38; furnace with an advance of $1 per unit for material above 10 per cent.
Silvery iron, 6 per cent, $24; 7 per cent, $25; 8 per cent, $25 to $26; 9 per cent, $27.50; 10 per cent, $29; 11 per cent, $31; 12 per cent, $33.

Fluxes and Refractories

Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, gravel, per net ton, f.o.b. Illinois and Kentucky mines	$16.00
No. 2 lump, per net ton	19.00
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton	15.00 to 16.00
Fluorspar, No. 1 ground bulk, 95 to 98 per cent calcium fluoride, not over 2½ per cent silica, per net ton, f.o.b. Illinois and Kentucky mines	32.50

Per 1000 f.o.b. works:

Fire Clay	High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	43.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton		6.50 to 7.50
Silica Brick:		
Pennsylvania		40.00
Chicago		49.00
Birmingham		54.00
Silica clay, per ton		8.00 to 9.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		48.00

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

Machine bolts, small rolled threads..60 and 10 per cent off list
Machine bolts, all sizes, cut threads, 50, 10 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads, 50, 10 and 10 per cent off list
Carriage bolts, cut threads, all sizes..50 and 10 per cent off list
Eagle carriage bolts .....65 and 10 per cent off list
Lag bolts .....60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads..50 and 10 per cent off list
Other style heads .....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ¾ x 4 in., 45, 10 and 5 per cent off list
Larger and longer sizes.....45, 10 and 5 per cent off list
Hot-pressed nuts, blank and tapped, square.....4c. off list
Hot-pressed nuts, blank or tapped, hexagons....4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped..4.10c. off list
Bolt ends with hot pressed nuts..50, 10 and 10 per cent off list
Bolt ends with cold pressed nuts..45, 10 and 5 per cent off list
Washers* .....6.50c. to 6.25c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot pressed and cold punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

(Quoted with freight allowed within zone limits)

Semi-finished hex. nuts:
⅞ in. and smaller, U. S. S.....80 and 5 per cent off list
⅞ in. and larger, U. S. S.....75 and 5 per cent off list
Small sizes, S. A. E.....80, 10, and 5 per cent off list
S. A. E., ⅞ in. and larger.....75, 10 and 5 per cent off list
Stove bolts in packages.....80, 10 and 5 per cent off list
Stove bolts in bulk .....80, 10, 5 and 2½ per cent off list
Tire bolts .....50, 10 and 5 per cent off list

Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)

(To jobbers and consumers in large quantities)

	Per 100 Net S. A. E.	Per 100 Net U. S. S.		Per 100 Net S. A. E.	Per 100 Net U. S. S.
¼-in.	$0.44	$0.44	⅝-in.	$2.35	$2.40
5/16-in.	.515	.515	⅞-in.	3.60	3.60
⅜-in.	.62	.66	1-in.	5.65	5.80
7/16-in.	.79	.90	1⅛-in.	8.90	8.90
½-in.	1.01	1.05	1¼-in.	12.60	13.10
9/16-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅝-in.	1.70	1.73	1½-in.	21.00	21.00

Larger sizes—Prices on application.

Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws.....80, 10 and 5 per cent off list
Milled standard set screws, case hardened, 80 and 10 per cent off list
Milled headless set screws, cut thread, 80 and 10 to 80 per cent off list
Upset hex. head cap screws, U. S. S. Thread, 80, 10, 10 and 5 per cent off list
Upset hex. cap. screws, S. A. E. Thread 80, 10 and 5 per cent off list
Upset set screws.....80, 10 and 10 per cent off list
Milled studs .....75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$35.00
Forging billets, ordinary	40.00
Forging billets, guaranteed	45.00
Sheet bars	35.00
Slabs	35.00
*Wire rods, common soft, base, No. 5 to ⅝-in.	45.00
Wire rods, common soft, coarser than ⅝-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	1.90c.
Skelp, sheared, per lb.	1.90c.
Skelp, universal, per lb.	1.90c.

*Chicago mill base is $46. Cleveland mill base, $45.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100* (½% Nickel, 10 to 20 per cent Carbon)	$3.00 to $3.25
2300 (3% Nickel)	4.50 to 4.75
2500 (5% Nickel)	5.75 to 6.00
3100 (Nickel Chromium)	3.50 to 3.65
3200 (Nickel Chromium)	5.00 to 5.25
3300 (Nickel Chromium)	7.50 to 7.75
3400 (Nickel Chromium)	6.25 to 6.50
5100 (Chromium Steel)	3.25 to 3.50
5200* (Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.25 to 4.50
6100 (Chromium Vanadium spring steel)	4.00 to 4.25
9250 (Silicon Manganese spring steel)	3.25 to 3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4.00 to 4.25
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.25
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for coal drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
Aug.	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
19.....	14.87½	14.57½	57.62½	9.60	9.50	7.95	7.60
20.....	15.00	14.62½	57.75	9.65	9.50	8.00	7.65
21.....	15.00	14.65	58.12½	9.65	9.50	8.00	7.65
22.....	15.00	14.65	....	9.70	9.50	8.00	7.65
24.....	15.00	14.67½	57.75	9.70	9.50	8.00	7.65
25.....	15.00	14.62½	57.75	9.70	9.50	8.00	7.65

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Aug. 25.

The markets are all comparatively quiet. Copper is a little stronger. Tin buying has fallen off but prices are steady. The lead market is a little easier. The strength of the zinc market persists.

Copper.—The publication of statistics for July last week imparted considerable strength to the market and prices have been advancing moderately nearly every day since. Sales have been made up to and including today as high as 14.95c., delivered, but no metal, so far as can be ascertained, has sold as high as 15c., Connecticut valley. Today prices in London have receded about 10s. per ton and the situation here is a little easier as a result. It is claimed that electrolytic copper can be bought today at 14.87½c., delivered, from some sellers. A number of the leading producers, however, will not sell under 14.92½c. to 14.95c., delivered, or else are out of the market entirely. Moderate sales for domestic consumption have been made during the week. While the statistics for July showed a reduction of 3318 tons of refined copper in producers' stocks with shipments for the month in excess of production, other data, covering blister copper, were equally favorable and significant. The statistical position in general is very strong and the future of the market is bright. Copper is considered stronger today than in many months. Lake copper is quoted at 15c., delivered.

Tin.—The past week has been one of the quietest for a long time. Total sales have not exceeded 500 tons and on most days the market approached stagnation. Buyers and sellers have been indifferent and the market has been a drifting one. After the heavy business which was transacted recently the present situation is to be expected. Consumers have quite fully covered their requirements and there is no incentive to buy. London prices today were nearly the same as a week ago with spot standard quoted £256 15s., future standard at £259 15s. and spot Straits at £252 15s. per ton. The Singapore price yesterday was £265. In this market spot Straits tin was quoted today at 57.75c., New York, with very little business reported. Arrivals thus far this month have been 5770 tons with 7070 tons reported afloat.

Lead.—The situation continues decidedly mixed and an appraisal of prices in the outside market is still more or less a matter of guessing. Consumers who need the metal have to pay as high as 10.12½c., New York, while sales under other conditions are made as low as 9.40c. We quote the outside market as nominal at 9.70c., New York, or 9.50c., St. Louis. The leading producer advanced its contract price on Aug. 19 from 9.25c. to 9.40c., New York. The principal seller in the Middle West is taking business at 9.40c., East St. Louis, for September. In general the situation is a little easier than it was recently.

Zinc.—Demand for consumers continues at a moderate rate and the market is firm and a little higher than a week ago. Sales are reported at 7.65c. and 7.67½c., St. Louis, with some producers asking 7.70c. Ore prices continue high at $53 in the Joplin market. There are very few sales for export, prices in London being a little too low, but the situation is strong.

Nickel.—Ingot nickel in wholesale lots is quoted unchanged at 34c. with shot nickel at 35c. per lb. Electrolytic nickel is quoted at 38c.

Antimony.—Chinese metal for spot delivery is a little easier and is available in limited quantities at 17c., New York, duty paid, with September arrival quoted at 16.75c.

Aluminum.—Virgin metal 98 to 99 per cent pure is quoted at 27 to 28c., delivered.

Old Metals.—The market is firm and business is good. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	14.25
Copper, heavy and wire	13.25
Copper, light and bottoms	11.75
Heavy machine composition	10.50
Brass, heavy	8.75
Brass, light	7.75
No. 1 red brass or composition turnings	9.75
No. 1 yellow rod brass turnings	9.75
Lead, heavy	8.75
Lead, tea	7.25
Zinc	5.25
Cast aluminum	19.50
Sheet aluminum	19.50

Chicago

Aug. 25.—No change has taken place in the price of copper; tin has declined, and lead and zinc have advanced. Tin has eased off because the available supply has proved adequate to meet market requirements. Lead is scarce with just enough metal coming out to satisfy current consumption and zinc is in fair demand. Old metal prices are unchanged. We quote, in carload lots: Lake copper, 14.80c.; tin, 58.50c.; lead, 10.10c.; zinc, 7.75c.; in less than carload lots, antimony, 19.50c. On old metals we quote copper wire, crucible shapes and copper clips, 12c.; copper bottoms, 10.50c.; red brass, 9.25c.; yellow brass, 7.75c.; lead pipe, 8c.; zinc, 4.50c.; pewter, No. 1, 32.50c; tin foil, 41c.; block tin, 46c.; all buying prices for less than carload lots.

Increased Activity in the Valleys

YOUNGSTOWN, Aug. 25.—Confirming the predictions voiced last month of broader finished steel production with the approach of September are the operating schedules of steel properties in the Mahoning and Shenango Valleys for the last week in August. For the first time in several months, the number of active sheet mills in the Mahoning Valley exceeds 100, with 105 scheduled, out of a total of 127. The Waddell Steel Co., idle last week, has started five mills, while the Mahoning Valley Steel Co. has added one, for a total of six. The Youngstown Sheet & Tube Co. has 25 sheet mills under power in this district, scattered among its plants at East Youngstown, Youngstown and Warren. The Republic Iron & Steel and the Newton Steel Co. are each operating 16 units.

Tin plate capacity is active closely to normal, and Valley independents expect to be able to maintain a high production rate through September. Substantial releases against contracts are now being issued by packing and canning interests, accounting for the high production rate.

Bessemer steel converters are active at 75 per cent, as compared with 60 per cent in June, while 36 of 52 independent open-hearth furnaces are in operation.

The Carnegie Steel Co. and the Sharon Steel Hoop Co. are maintaining their properties at a rate above 90 per cent. Except for its cold strip department, which is active at 70 per cent, the Trumbull Steel Co., Warren, is running its plants close to capacity.

Recent business is enabling pipe makers to maintain output at a 72 per cent rate, with 13 of 18 tube mills rolling. Skelp mill operations are on a somewhat broader basis.

PERSONAL

Victor L. Jones, for the past six years sales engineer and manager of structural sales for the Union Iron Works, Los Angeles, has been appointed general sales manager for the entire company. He is a graduate civil engineer of the University of California and has wide acquaintance in the steel industry of Southern California. In his new capacity he will have charge of the sales engineering staff for all phases of fabricated steel, the design and erection of steel industrial buildings, as well as the sale and service of Shepard cranes and hoisting equipment throughout the southwest. Consolidation of the concern's sales activities was effected in the interests of more efficient supervision.

VICTOR L. JONES

Gilbert L. Lacher, who has been editorial representative of THE IRON AGE at Chicago for the past six years, has been transferred to the New York office as associate editor. Rogers A. Fiske has been appointed to succeed Mr. Lacher at Chicago. Since January, 1923, Mr. Fiske has been associate editor of *Power Plant Engineering*, Chicago. He is a mechanical engineer (University of Colorado) and before going into technical journalism had seven or eight years' experience with manufacturing companies in structural, machine shop, foundry and power plant design and operation.

Joseph J. Tynan, recently appointed vice-president of the Bethlehem Steel Corporation, in charge of all Pacific Coast interests of the organization, was born in 1874 in County Tyrone, Ireland, where he worked as a mechanic at the Sion Mills previous to coming to the United States in 1891. Arriving in New York he went to Philadelphia where he secured work at the Philadelphia Engineering Works. Shortly after, he went to the Baldwin Locomotive Works, and later to the Cramp shipbuilding company. He took mechanical courses at the Spring Garden Institute and the Franklin Institute, at Philadelphia, supplementing this training with correspondence courses. He was particularly interested in the development of pneumatic tools and applied for a number of patents, some of which were later bought by the Cramp company. Within a few years he was appointed chief of the hull engineering department and later general superintendent of works. In October, 1906, he was appointed manager of the Union Iron Works, a branch of the Bethlehem Shipbuilding Corporation in San Francisco. In 1915 he had charge of the construction of submarines for the British government at Montreal, Canada. In 1918 the Union plant of the Bethlehem Shipbuilding Corporation built and delivered to the United States Government 37 vessels, establishing a record for which Mr. Tynan received a gold medal from the United States Shipping Board. He is a member of the American Society of Marine Engineers and of the Society of Naval Architects and Marine Engineers.

Ernest F. Burchard, who has prepared the United States Geological Survey reports on iron ore for many years, is now in Argentina, where he will examine iron ore deposits for the Argentine Government under the direction of H. Foster Bain. Before his return in November Mr. Burchard will visit the iron and manganese ore deposits of Brazil.

E. J. Bartlett, general manager Baker R & L Co., Cleveland, manufacturer of factory tractors and automobile bodies, was elected president at the annual meeting on Aug. 20, succeeding F. W. Treadway who was made chairman of directors. E. J. Stahl was elected vice-president and W. C. Fisher was reelected secretary.

Allan Fraser, who on June 1 resigned his connection with the Wickwire Spencer Steel Co. as Pacific Coast manager, will remain in San Francisco, and has established offices at 507 Mission Street as manufacturers' representative. He will handle the products of 10 companies, including the Worcester Pressed Steel Co., W. E. Putnam Co., Inc., and Olson Mfg. Co., Worcester, Mass.; D. G. Gautier & Co., New York; Hyde Mfg. Co., Southbridge, Mass., and Beall Brothers, Alton, Ill.

W. E. Emmett has succeeded Charles C. Overmire in charge of the structural department of the Moore Dry Dock Co., Oakland, Cal. Mr. Emmett is a graduate of the engineering school of the University of Kansas, Lawrence, Kan. For 11 years he was connected with the Kansas City Structural Steel Co. in its drafting room and as a contracting engineer. He was also with the Missouri Valley Bridge & Iron Co., Leavenworth, Kan., for three years.

E. E. Seyfert, formerly district manager of sales for the Corrugated Bar Co., and later for the Kalman Steel Co., in Philadelphia, covering a period of 15 years, has accepted a position with the Federal Alloy Steel Corporation, Drexel Building, Philadelphia, to take charge of its reinforcing bar sales.

C. L. Waggoner, assistant superintendent By-Products Coke Corporation, Chicago, has been appointed general superintendent of the coke oven plant, South Chicago, Ill., succeeding P. S. Savage, resigned.

W. C. McKee, lately manager of the Pulaski Iron Co., 1008 Real Estate Trust Building, Philadelphia, has been appointed general superintendent of the Federal furnace plant of the By-Products Coke Corporation, South Chicago, Ill., to succeed George Vosburgh, resigned.

F. J. O'Connor has been appointed assistant purchasing agent for the Chicago, Milwaukee & St. Paul Railway, with headquarters at Chicago, succeeding G. R. Cooke, resigned.

Capt. Lane M. Scofield, formerly Chicago district representative Reed-Prentice Co., Worcester, Mass., has joined the sales organization of Stocker-Rumely-Wachs Co., Chicago, which has recently taken the agency for the Reed-Prentice line.

Guy Hubbard, who has been active in the machine tool industry for several years, has joined the editorial staff of the American Society of Mechanical Engineers. His headquarters will be at the New York office of the society.

James M. Hutton, superintendent Atlas Die Casting Co., Worcester, Mass., sailed Aug. 22 on the Majestic from New York, for a two-months European trip.

John Christensen, president Cincinnati Gear Co., Cincinnati, has been knighted by King Christian of Denmark, according to a dispatch from abroad. Mr. Christensen has been touring Denmark with members of the Danish Brotherhood of America, of which he is vice-president.

Louis W. Landay, who formerly was with the Hyman Michaels Co. and the Wilkoff Co., is now associated with the Erie Iron & Steel Co., Erie, Pa., in its Pittsburgh office. Charles Burstein will be associated with him at Pittsburgh.

Charles E. Buysse, Detroit, has just been placed in charge of sales of the Liquid Fuel Engineering Co., gas burner manufacturer, which recently moved into new quarters at 6565 Russell Street, Detroit.

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W. G. Seeley, formerly sales manager Allison & Co., Chester, Pa., which is now out of business, has organized the Chester Steel & Forge Co., Chester, which will specialize in drop and hammered forgings of carbon and alloy steels.

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C. E. Gausden, manager of the export department, British Empire Steel Corporation, Montreal, Canada, will assume the duties of the late Edward P. Merrill, with the title of acting general manager of steel sales.

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William P. Andrews, of the New York office, American Sheet & Tin Plate Co., has resigned and after Sept. 15 will be associated with Theodore A. Gessler in the Four Ways Realty Corporation, Miami, Fla.

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Major John C. Shaw, chief engineer for the McClintic-Marshall Co. in Los Angeles since last December, has been appointed city engineer of Los Angeles. He was connected with the McClintic-Marshall firm in Pittsburgh for some time about six years ago and has also been associated with the Carnegie Steel Co., Bethlehem Steel Co. and other large corporations. He was engaged on the construction of the Panama Canal locks and on the Cunard Steamship piers in New York; also in railroad construction in the East. During the war, Major Shaw served overseas in the engineering corps in charge of bridge, road, storehouse and other construction work.

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Carl W. Littler, formerly chief engineer Semet-Solvay Co., Syracuse, N. Y., now is chief engineer of the Aliquippa Works of the Jones & Laughlin Steel Corporation, Pittsburgh. For a number of years he was with the Carnegie Steel Co. and resigned the position of chief engineer of the Clairton coke works to go with the Semet-Solvay Co.

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W. M. Horner has sold his entire holdings, nearly 90 per cent of the stock, in the Mahr Mfg. Co., Minneapolis, maker of oil burning equipment, to the Diamond Iron Works, that city, and will make his home on the Pacific Coast, partly for the benefit of Mrs. Horner.

OBITUARY

A. H. CORDERY, formerly general sales manager of the Phoenix Iron Co., Philadelphia, who died Thursday, Aug. 20, in his seventy-fifth year, was one of the veterans of the American steel industry. He retired from the sales managership of the Phoenix company in October, 1923, following a continuous service of 54 years and six months. During his period of retirement he frequently dropped in at the offices of the Phoenix Iron Co., and was there a little over a week ago, casually remarking that he was going to the hospital for a slight operation. He never rallied from this operation, which was performed at the Hahnemann Hospital, Philadelphia, a few days before his death. The funeral was held on Aug. 24. A widow survives. Mr. Cordery started with the Phoenix Iron Co. as a telegraph operator in March, 1869, and rose by gradual promotions to the position of general manager of sales, which he held for 20 years prior to his retirement. At the time Mr. Cordery started with the Phoenix company it was the country's largest producer of shapes. There were no steel products in those days except rails and not many of those, most of the rolled products being of iron. The principal mills were located along the Atlantic Coast. The center of the iron business was Philadelphia and prices were based on Philadelphia. Few men lived to see as many changes in the iron and steel industry as did Mr. Cordery; not only in the manufacture of iron and steel, but in their uses and in transportation.

A. H. CORDERY

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ALEXANDER MATHES, treasurer General Metals Refining Co. and its subsidiary, the G. Mathes Co., St. Louis, died at the Baptist Sanitarium in that city on Aug. 17, after an illness of a year. He was 58 years old. Mr. Mathes went to St. Louis more than 40 years ago with his widowed mother and three brothers. They founded the G. Mathes Co., which was named for his mother.

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EDWARD PELTON MERRILL, general sales manager British Empire Steel Corporation since November, 1922, died on Aug. 6 in the Montreal General Hospital, Montreal, Canada, after a short illness. He was a native of Ohio and was educated at Case School of Applied Science, Cleveland. After two years with the American Steel Casting Co. at Sharon, Pa., he went to Cuba, where for five years he was assistant superintendent of the Spanish American Iron Co. at Santiago. He returned to the United States in 1902 and was appointed general manager of the Island Creek Coal Co. In 1907 he became managing director of the Real del Monte Mining Co., Pachuca, Mexico. Returning to the United States in 1911 he became assistant to the president Island Creek & Pond Creek Coal Companies, New York. Mr. Merrill served as captain in the air service during the war, at the close of which he went with the Dominion Steel Corporation.

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MICHAEL J. GRIFFIN, for many years a manufacturer of steel horseshoe calks at Hartford, Conn., died at the Lawrence Memorial Hospital, that city, on Aug. 14, in his fifty-third year.

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RUDOLPH P. GERLACH, president Peter Gerlach Co., Cleveland, manufacturer of cooperage machinery, died Aug. 21, aged 72 years. He had been connected with the company, of which he had long been head, since 1871.

"Comparative Slow Bend and Impact Notched Bar Tests on Some Metals" is the title of technological paper No. 289 of the Bureau of Standards. The author is S. N. Petrenko, associate mechanical engineer of the bureau. The tests were made primarily to determine whether the slow bend test may be used as a substitute for, or a useful addition to, the impact test. The effect of the shape of the notch on the impact and on the slow bend values is also discussed.

The semi-annual bonus was paid to each of the 2430 employees of the Commonwealth Steel Co. at Granite City, Ill., on Aug. 17. The bonus amounted to an average of $20.60 for each employee. The checks were presented following a program of entertainment at the plant. Addresses were made by Clarence H. Howard, president of the company, and A. T. Morey, general manager, and refreshments were served. About 4500 persons, employees and their families, were present.

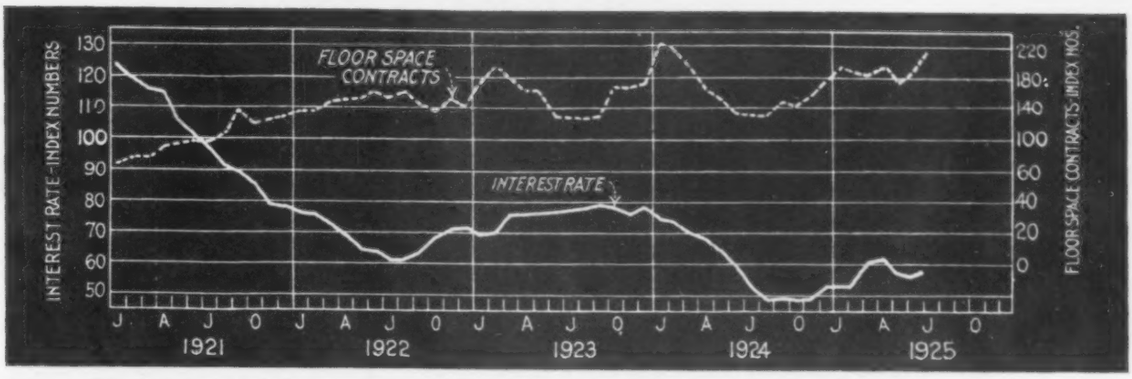

Fig. 4—The Enormous Building Program Means Continued Material Demand, but There Are Signs That the Country Has Caught Up With Its Building Needs

Business Cycle Resumes Upward Swing

(*Concluded from page* 555)

The large volume of building activity this year has been one of the most potent factors in maintaining industrial activity during the summer and the recent increase is now working for further expansion. Students of the business situation, however, will have noted that *the most reliable study available indicates that the building needs of the country have now been exceeded.* It is probable that the peak of building activity will be reached this year. When this occurs an important support will be removed from the industrial situation.

Other Favorable Signs

OTHER barometers which have been presented in this department from time to time confirm the foregoing discussion.

1. New business enterprises in July increased sharply, while the trend of business failures was downward.

2. June production in basic industries fell below the trend of retail trade, which has continued to expand gradually. This shows that the industrial output has been readjusted to a normal basis.

3. Activity among important steel consumers is well sustained. Our indexes of the petroleum, mining, and automobile industries, all indicate a continued high level of demand.

Summary

1. *The favorable factors in the industrial situation far outweigh the unfavorable ones. All important trade barometers point upward.*

2. *The general business outlook is for an expanding volume of manufacture and trade and higher prices during the remainder of the year.*

3. *The iron and steel industry promises to share fully in this improvement.*

Trade Changes

The Gibb Welding Machines Co., successor to Gibb Instrument Co., Bay City, Mich., manufacturer of electric welding equipment, has appointed Arthur Jackson, 32 Glenholme Avenue, Toronto, Ontario, sales representative for Ontario and Eastern Canada.

The Union Drawn Steel Co., Beaver Falls, Pa., moved its Chicago sales office to the Tribune Tower, 435 North Michigan Avenue, July 29.

The Landis Machine Co., Victor plant, Waynesboro, Pa., manufacturers of Victor collapsible taps, solid adjustable taps and receding chaser taps announce the appointment of the following agents: The Chadwick Co., 549 West Washington Boulevard, Chicago, for Illinois, Wisconsin, Iowa and northern Indiana; A. J. Vaughn, machinery expedition and sales department, Bourse, Philadelphia, for eastern Pennsylvania, New Jersey and Delaware; William H. Harvey, 225 Denison Building, Syracuse, N. Y., for Syracuse, Rochester and central New York.

The Cleveland Duplex Machinery Co., Cleveland, has been appointed to represent the American Broach & Machine Co., Ann Arbor, Mich., manufacturer of broaching machines and broaching tools, in the Cleveland territory.

The Union Mfg. Co., New Britain, Conn., manufacturer of drill and planer chucks and castings, has appointed the Machinists' Supply Co., sole distributor in the Pittsburgh district for its complete line of chucks.

The Pratt & Whitney Co. has moved its store in San Francisco to 917 Howard Street.

The Kuhlman Electric Co., Bay City, Mich., has appointed the Stevens Sales Co., 134 West Second South Street, Salt Lake City, Utah, district representative for the State of Utah and parts of Idaho and Nevada, adjacent to Utah. The Stevens company will handle Kuhlman power, distribution and street lighting transformers.

The Huey & Philp Hardware Co., Dallas, Tex., has been appointed exclusive sales representative of the Cincinnati Shaper Co. and the Cincinnati Gear Cutting Machine Co. in Central and Western Texas. Woodward-Wight & Co., Ltd., New Orleans, will be exclusive representatives of the Cincinnati Shaper Co. and the Cincinnati Gear Cutting Machine Co. in New Orleans territory.

Neff, Kohlbusch & Bissell, 1045 West Washington Boulevard, Chicago, have been appointed sales agents in Chicago territory for the Cincinnati All-Steel Press Brakes manufactured by the Cincinnati Shaper Co.

The Fulton Engineering Co., 620 American Bank Building, Los Angeles, has been appointed Southern California and Arizona representative of the Foote Brothers Gear & Machine Co., Chicago.

The Miamus Diesel Engine Co.'s Los Angeles office is now located in a two-story brick building at 324 East Third Street, that city. Its main office is in New York and the plant is at Stamford, Conn.

The Pittsburgh Valve Foundry & Construction Co. has appointed A. G. Hill, with offices at 45 Jarvis Street, Toronto, Canada, as agent for the eastern Canadian district.

The Tice-Tinsley Steel Co., Youngstown, Ohio, after Sept. 1 will be located in its new warehouse and office at Hubbard Road at Albert Street.

The Linde Air Products Co., New York, announces that its district sales office at Seattle, Wash., is now located at 421 Railway Exchange Building, 619 Second Avenue. O. H. Davenport is district sales manager.

The Steam Vehicle Corporation of America has disposed of its plant at Newton, Mass., to Bachrach, Inc., Newton, which will use it for another branch of service. The selling company is removing equipment from its Newton works for transfer to its new plant at Allentown, Pa., where a building at the plant of the Bethlehem Motors Corporation recently was leased.

The Uehling Instrument Co., Paterson, N. J., has appointed two new Southern agents to handle its line of recorders and other power plant instruments. They are John C. Candler, 315 Glenn Building, Atlanta, Ga., and Charles M. Setzer, Charlotte, N. C.

Machinery Markets and News of the Works

LARGE ORDER FOR PRESSES

Hudson Motor Car Co. Buys 350 Machines Costing Over $1,000,000

Buying by Automobile Manufacturers is the Outstanding Business of the Week, Which Otherwise Is Dull

THE price cutting which has been marked lately in the automobile industry has encouraged automobile manufacturers to seek equipment which will reduce manufacturing costs further, with the result that a fair amount of machinery buying is coming from that source. One of the largest machinery orders since the war has been placed by the Hudson Motor Car Co., Detroit, with the E. W. Bliss Co., Brooklyn, involving about 350 presses of all types for a new body and fender plant. The purchase means an outlay of over $1,000,000.

The Hudson company and also the Packard and Ford companies have placed substantial orders for drilling machines with Cincinnati manufacturers. The Buick company has purchased several gap lathes. Pending inquiries from Michigan automobile manufacturers indicate that considerable equipment is yet to be bought.

There are indications of a revival of machine tool buying by the railroads, although not much business has come from that source within the past few weeks.

The Illinois Steel Co., Chicago, has issued an inquiry for 12 machines of various types.

In New England business in machine tools is only slightly, if any, better, but many metal working shops in that district are busier than they have been at any time this year. A shortage of skilled tool men is reported.

New York

NEW YORK, Aug. 22.

THE outstanding item in the machinery market is the large order for presses placed with the E. W. Bliss Co., Brooklyn, by the Hudson Motor Car Co., Detroit. The order is for about 350 presses of all sizes from bench type to those weighing 150 tons and involves an expenditure of more than $1,000,000. The equipment is for a completely new body and fender shop for the Hudson company. The order is said to be the largest of its kind ever placed.

General business continues in about the same groove as in recent weeks. Some in the trade believe it is a little quieter due to the fact that so many people are away on vacations that prospective purchasing is being postponed until after Labor Day. The Sante Fe Railroad has purchased two journal turning and axle lathes from the Niles-Bement-Pond Co. The American Car & Foundry Co. has bought a 44-in. side head boring mill for its shops at Berwick, Pa. The Farrel Foundry & Machine Co., Buffalo, bought a 100-in. boring and turning mill. The Hubbard Steel Foundry Co., East Chicago, Ind., ordered a 96-in. 100-ton wheel press and the Hope Forge & Machine Co., Mount Vernon, Ohio, a 6-ft. radial drill.

Contract has been let to G. A. Glantz, 405 Lexington Avenue, New York, for a two-story repair shop, 40 x 100 ft.

The Intertype Corporation, 50 Court Street, Brooklyn, plans a new plant at Harrison, N. Y., to cost about $500,000. The Ballinger Co., 100 East Forty-second Street, New York, is engineer.

The Brooklyn Edison Co., Brooklyn, N. Y., will soon proceed with the superstructure for an addition to its power plant said to cost about $500,000.

John De Hart, 1039 Fox Street, New York, has completed plans for a four-story repair shop and garage, 100 x 101 ft., to cost about $125,000.

A power plant will be constructed by the Lenox Laundry Co., 23 North Third Street, Mount Vernon, N. Y., 30 x 70 ft., in connection with a new three-story laundry, 100 x 100 ft., to cost about $150,000. Francisco & Jacobus, 511 Fifth Avenue, New York, are engineers.

The Goodyear Tire & Rubber Co., 120 Broadway, New York, plans a five-story addition to its mill at Akron, Ohio, estimated to cost $750,000. General contract was awarded the Barney-Ahlers Construction Co., 110 West Fortieth Street, for a six-story distributing plant, 100 x 167 ft., to cost about $250,000. George M. Stadelman is president.

The New York Edison Co., 130 East Fifteenth Street, New York, will soon take bids for a one-story automatic power substation.

The Marine Metal & Supply Co., 167 South Street, New York, has bought about $500,000 worth of concrete mixers and contractors' and roadmaking machinery, which will be offered for sale by its selling agent, the Industrial Plants Corporation, 25 Church Street.

The Standard Oil Co., New York, has awarded a contract to the Tucker Construction Co., 103 Park Avenue, for a storage plant, with repair garage for company trucks and cars at Greenpoint, L. I.

The Crane Co., 836 Michigan Avenue, Chicago, has taken bids for a two-story factory and distributing works in Brooklyn, 100 x 120 ft., estimated to cost $80,000. Raymond Hood, 18 East Forty-first Street, New York, is architect.

The Toms River Hydro-Electric Co., Toms River, N. J., plans a hydroelectric generating plant on the Toms River, to cost about $250,000.

The Board of Education, Phillipsburg, N. J., will install manual training equipment in its new high school, to cost $425,000.

The F. N. Dubois Co., New York, maker of plumbing equipment, awarded a contract to the Austin Co., 120 Broadway, New York, for two buildings, 90 x 160 ft. and 50 x 100 ft., at Newark, N. J., to cost $75,000.

A new three-story and basement building, 75 x 95 ft., to be erected by the Bayonne Steel Products Co., 264 Jelliff Avenue, Newark, will be used as the main operating unit of the company, which will move its present plant to this location in December. Additional equipment will be installed. B. E. Herr is president.

The Reo Motor Car Co., 520 Broad Street, Newark, N. J., plans a two-story and basement repair shop and garage, 150 x 157 ft., on Central Avenue, to cost about $160,000, with equipment. Fletcher-Thompson, Inc., 542 Fairfield Avenue, Bridgeport, Conn., is architect.

Fire, Aug. 17, destroyed part of the plants of the Hoboken Paper Box Co., the United States Willow Mfg. Co., and the Federal Chemical Co., occupying adjoining buildings on Thirteenth Street, Hoboken, N. J., with loss reported at $100,000. Plans for rebuilding are under consideration.

The Board of Education, Scotch Plains, N. J., plans to install manual training equipment in its new high school, to cost in excess of $250,000, for which bids will be asked until Sept. 8.

The Public Service Electric & Gas Co., Public Service Terminal, Newark, N. J., plans a new automatic power substation at Trenton, N. J., estimated to cost $2,000,000, with equipment.

New England

BOSTON, Aug. 24.

ACTIVITY the past week has centered largely in used equipment and was confined to a few houses. Sales of new tools reported by local houses are less than a dozen and each involves a small amount of capital invested. An important sale is a sizable pneumatic lift gravity drop hammer to the Lawrence B. Smith Co., South Boston, by the Pneumatic Drop Hammer Co. The sale by Hill, Clarke & Co., Boston, of some 650 surplus tools of the Taft-Peirce Mfg. Co., Woonsocket, R. I., jigs, tools, fixtures, etc., attracts attention; several lots were taken by metal working shops throughout New England. There is a falling off in new prospects, but it is expected that quite a few machines now under consideration will result in business in another month.

Metal working shops in this territory are busier than they have been before this year. A shortage of skilled tool men is reported. Small tools continue to move out of stock freely. The Boston & Albany Railroad has purchased a 16-ton wrecking crane for its Allston, Mass., engine house. Two 25-ton cranes previously located at the company's West Springfield and East Boston, Mass., shops have been scrapped.

The Dedham & Hyde Park Gas & Electric Co., 1242 River Street, Hyde Park, Boston, has awarded a contract for the erection of a repair shop and garage.

H. M. Turner, 112 Pearl Street, Boston, is architect for a dam and hydroelectric plant to be erected by the Bethlehem Electric Co., Bethlehem, N. H., to cost $100,000. Contract is let.

The Providence Gas Co., Providence, R. I., has awarded a contract for the erection of a two- and three-story, 200 x 300 ft. service station. Jenks & Ballou, 1035 Grovenor Building, Providence, are architects.

The Bridgeport Brass Co., Bridgeport, Conn., has acquired the plant and business of the Keating Valve Co., 32 Taylor Street, Hartford, Conn., and will consolidate with its organization. It is still undecided as to whether the works will be removed to the main factory at Bridgeport, or continued at the present location as a branch.

Bilderbeck & Langdon, State Street, New London, Conn., architects, plan a two-story repair shop and garage, 50 x 100 ft., on Thames Street, Groton, Conn., to cost about $60,000, with equipment.

The Waterbury Steel Ball Co., Waterbury, Conn., plans a one-story addition at Gear and Aurora Streets, to be equipped as a motor house.

The Bridgeport Casting Co., Bridgeport, Conn., is preparing plans for a one-story foundry addition on North Street. Fletcher-Thompson, Inc., 542 Fairfield Avenue, is engineer.

The Twin State Gas & Electric Co., Brattleboro, Vt., has acquired the Jones & Linscott Electric Co., Lancaster, N. H., for $128,000, and plans extensions, including transmission lines.

The Barber-Colman Co., River and Loomis Streets, Rockford, Ill., manufacturer of chucks, drills, etc., has let a contract to the McNally Building Co., Concord Street, Framingham, Mass., for a one-story factory branch at Framingham, 100 x 120 ft., to cost $45,000.

The Department of Public Works, Boston, through Mulhall & Holmes, 33 Newbury Street, architects, will prepare plans for a municipal repair shop and garage at Hancock and Bowdoin Streets, Dorchester, to cost about $50,000.

The General Electric Co., Lynn, Mass., has awarded a number of separate contracts for the erection and completion of its one-story forge shop, 55 x 100 ft., on Western Avenue.

John F. McBride, Springfield, Mass., has filed plans for a one-story machine and automobile repair shop at 1162 State Street, for which foundations will be laid at once.

The Builders' Steel Co., Windsor Street, Hartford, Conn., has awarded a contract to Louis Cellucci, 124 Wooster Street, for a one-story fabricating shop, 50 x 61 ft. A power house will also be built. Mylchreest & Reynolds, 238 Palm Street, are architects and engineers.

A. H. Wells & Co., Waterbury, Conn., makers of metal tubing, plan a one-story addition, 100 x 145 ft., for which foundations soon will be laid.

Contract was awarded by the Providence Gas Co., Providence, R. I., to the Aberthaw Construction Co., 27 School Street, for a one-story steam power house, 50 x 80 ft.; three-story mechanical and service building, 80 x 220 ft.; one-story repair shop and garage, 85 x 290 ft., and another two-story structure, 48 x 88 ft., estimated to cost $300,000, with equipment. Jenks & Ballou, Grosvenor Building, are architects.

The Hart Mfg. Co., Hamilton Street, Hartford, Conn., manufacturer of electric equipment, has awarded a contract to J. G. Stone, 57 Mountford Street, for a one-story addition, 50 x 82 ft., to be equipped as a plating works. Mylreest & Reynolds, 238 Palm Street, are engineers.

Chicago

CHICAGO, Aug. 24.

FROM the standpoint of actual buying, August will probably be one of the poorest months of the year for most local machine tool dealers. Houses selling heavy special purpose railroad equipment have fared somewhat better than those dealing more largely in standard types of tools. The Chicago, Milwaukee & St. Paul has distributed most of its list; during the week it placed five used tools and several new machines. The Illinois Central has placed an order for a cutter and tool grinder. In general, industrial buying has been very light, although one of the largest orders for special equipment has just been placed by the A. O. Smith Corporation, Milwaukee, which bought two large bending rolls, one of which is to be built to bend 4-in. plates. The bending is to form cylinders which are electrically welded and used as gasoline cracking retorts. Most current purchases are small, involving single tools, or at the most two or three. The Climax Engineering Co., Clinton, Iowa, has closed for a horizontal boring mill and two turret lathes. The Hannum Mfg. Co., Milwaukee, bought a 16-in. x 6-ft. tool room lathe. The largest new inquiry in the market is a list of 12 items for the Illinois Steel Co., Chicago, which is appended. The Universal Portland Cement Co., Chicago, is in the market for a motor-driven stake riveter, with 36-in. stake, to head cold rivets up to ⅝ in.

Illinois Steel Co.

(All motor driven except steam hammers)

One 24-in. heavy duty crank shaper.

One 26-in. heavy duty crank shaper.

One 60-in. heavy duty vertical boring and turning mill equipped with two boring bars.

One 72-in. heavy duty vertical boring and turning mill.

One Landis, or equivalent, head pipe cutting and threading machine, capacity ½ to 4-in. pipe.

One 30-in. throat punch to punch 1-in. hole through 1-in. plate.

One No. 7 "Champion," Beaudry & Co., or equivalent, power hammer.

One 10-ft. horizontal plate bending roll with capacity for ½-in. plate.

One 24-in. x 10-ft. between centers, heavy duty engine lathe.

One 24-in. stroke keyseating machine.

One 5-ft. heavy duty radial drill.

One 1000-lb. single frame steam hammer.

The Holmes-Pyott Co., machinist and founder, 159 North Jefferson Street, Chicago, has purchased property and contemplates the construction of a plant to cost $150,000.

The American Iron & Steel Works, Chicago, has had plans prepared by Harry B. Stevens Co., 4022 West Madison Street, for a two-story brick and concrete addition to its factory at 1600 Carroll Avenue, to cost $40,000.

The Clearing Industrial District, T. D. Heed, president, Chicago, has contracted with Foltz & Brand, 510 North Dearborn Street, to erect a one-story reinforced-concrete factory at Clearing, Ill., to cost $50,000.

The Hanover Woolen Mfg. Co., Hanover, Ill., will erect a power plant to cost $60,000.

The Iowa Southern Utility Co. is having plans prepared for a power substation at Burlington, Iowa, to cost $200,000.

The American Iron Wire Co., 1622 Carroll Avenue, Chicago, will soon take bids for a two-story addition, 35 x 150 ft., to cost $45,000. Harry E. Stevens & Co., 4022 West Madison Street, are architects.

The Illinois Slag & Ballast Co., Chicago, awarded contract to Emil G. Seip, 6822 Euclid Avenue, for a one-story plant, 48 x 95 ft., to cost $50,000.

The Western Public Service Co., Colorado Springs, Colo., is disposing of a $500,000 stock issue, part of the proceeds to be used for improvements in power plants.

The Minneapolis Garage Co., 3411 Hennepin Avenue, Minneapolis, plans to remodel a factory at Second Avenue North and Third Street for a nine-story and basement repair shop and garage 135 x 160 ft., to cost $100,000. Long & Thorshov, Andrus Building, are architects.

The Archer-Daniels-Midland Co., Twenty-Ninth Avenue, S. E., Minneapolis, plans a grain elevator to cost $100,000, with hoisting, conveying and other machinery. J. W. Daniels is president.

The Sioux Falls Paper Co., 204 East Tenth Street, Sioux Falls, S. D., plans a three-story distributing plant, 78 x 150 ft., to cost $75,000, with equipment. Perkins & McWayne, Paulton Building, are architects.

The Wabash Railroad Co., St. Louis, will build a one-story machine shop at Decatur, Ill., 60 x 120 ft., to cost $100,000. General contract was let to Dwight P. Robinson, Inc., 125 East Forty-sixth Street, New York.

Philadelphia

PHILADELPHIA, Aug. 24.

PLANS have been filed by John Zimmerman & Sons, Torresdale Avenue and N Street, Philadelphia, for a one-story power house at their textile mill, estimated to cost $25,000.

The Delaware River Steel Co., Chester, Pa., is working on an expansion and improvement program to cost $500,000 and designed to double the present capacity.

I. Halpern Brothers & Co., Inc., 1333 North Front Street, Philadelphia, metal products, will take bids soon for a one-story addition, 75 x 150 ft., at Erie Avenue and Corbin Street.

The Board of Education, Pittston, Pa., considers the installation of manual training equipment in a two-story and basement high school, to cost $250,000, for which bids will be asked soon. R. M. Herr, Simon Long Building, Wilkes-Barre, Pa., is architect.

The General Testing Laboratory, 104 North Tenth Street, Allentown, Pa., has moved to 130 North Ninth Street, where facilities will be provided for considerably increased output.

The Supplee-Wills-Jones Milk Co., 1523 North Twenty-sixth, Street, Philadelphia, considers the installation of an ice-making plant in connection with a proposed ice cream manufacturing plant at Chester, Pa., reported to cost in excess of $150,000.

The Haines, Jones & Cadbury Co., 1136 Ridge Avenue, Philadelphia, manufacturer of plumbers' brass and bronze goods, etc., is considering the purchase of property in the vicinity of Perkasie, Pa., as a site for a new plant.

The Board of Education, Emaus, Pa., will establish a manual training course in the high school, and will equip the Jefferson Building for initial work. Oscar B. Sandt, Easton, Pa., will be in charge of instruction.

Henry L. Reinhold, Jr., 1513 Walnut Street, Philadelphia, architect, has plans for a one and one-half story and tool house at Huntingdon, Pa., for which superstructure will begin at once.

The Asbestos Corporation, Philadelphia, has awarded a general contract to Robert E. Lamb, 814 North Nineteenth Street, for a one-story plant.

The Tasty Baking Co., 2801 Hunting Park Avenue, Philadelphia, has acquired a tract of 12 acres at Juniata and McMichael Streets, and is reported to be considering the erection of a new baking plant, to include power house, ovens, conveying machinery and other mechanical equipment.

The Keenan Supply Co., 2849 Germantown Avenue, Philadelphia, plumbing equipment and supplies, plans a one-story addition.

The Certainteed Products Co., Second Street and Erie Avenue, Philadelphia, manufacturer of roofing, will proceed with a one-story and basement addition, 50 x 154 ft., to cost $55,000, with equipment. Stofflett & Tillotson, Wesley Building, are architects.

Cossey & Huskey, Philadelphia, have awarded a contract to Harry Brocklehurst, 512 West Norris Street, for a one-story repair shop and garage at 606-8 West Callowhill Street, to cost $50,000.

The Atlantic City Railway Co., Atlantic City, N. J., operated by the Philadelphia & Reading Railway, Reading Terminal, Philadelphia, plans for a one-story ice-manufacturing and cold storage plant at Schellengers Landing, Cape May, N. J., to cost $45,000.

The Board of Education, Gloucester, N. J., is considering the installation of manual training equipment in its new high school, to cost $150,000, for which plans will be arranged soon.

The Board of Education, Picture Rocks, Pa., has awarded a contract to the W. H. Cramer Construction Co., Emporium, Pa., for a one-story vocational high school, 100 x 186 ft., to cost approximately $50,000. M. E. Kressley, Commonwealth Building, Harrisburg, Pa., is architect.

The Parson Brothers Slate Co., Pen Argyl, Pa., plans to erect a one-story mill, 60 x 100 ft., for the production of roofing slate. Estimated cost, $25,000 with machinery.

Cleveland

CLEVELAND, Aug. 24.

A GOOD volume of machine tool business, largely in special tools, is still coming from the automobile builders and parts makers in Michigan. The Hudson Motor Car Co. purchased considerable machinery during the week and it is understood that the Oakland Motor Car Co. will duplicate a number of its recent purchases. The White Motor Co., Cleveland, purchased several milling machines. The Marion Steam Shovel Co., Marion, Ohio, placed orders for two gear cutters. The Cleveland Planer Co. received orders for a 36-in. planer for the Federal Match Co., Cleveland; a 36-in. planer for the Schwarz Foundry & Machine Co., Detroit; a 30-in. planer for the Pullman Co. and a 48-in. planer for Price Brothers, Montreal, Quebec.

The New York Central Railroad is inquiring for a 20-in. shaper and a 24-in. vertical drilling machine. The Nickel Plate Railroad has not yet placed any orders against its recently issued list of about a half dozen machines. Machine tool manufacturers and dealers report a fair volume of single tool orders and expect that August sales will show a slight gain over July.

The Grabler Mfg. Co., Cleveland, manufacturer of fittings, awarded a contract for a five-story building, 60 x 220 ft. to be used for a machine shop and warehouse. Christian Swarzenberg & Gaede, 1900 Euclid Building, are architects.

The Mansfield Vitreous Enameling Co., Mansfield, Ohio, plans to erect a factory addition. L. A. Adams is the manager.

F. E. Myers & Brother Co., Ashland, Ohio, maker of pumps, will take bids about Sept. 1 for a five-story building, 70 x 180 ft., to be used for manufacturing departments and a brass foundry. The Lockwood Greene Co., 1566 Hanna Building, is engineer.

The Akron Lamp Co., 600 South High Street, Akron, Ohio, awarded contract for a factory addition, 64 x 87 ft.

The Ralston Steel Car Co., East Columbus, Ohio, will erect a boiler plant, 45 x 84 ft. Griggs & Meyers, 347 Fifth Avenue, New York, is engineer.

The Toledo Factories Co., West Woodruff and Thirteenth Streets, Toledo, contemplates the erection of a factory building for light manufacturing.

The Sieberling Rubber Co., Barberton, Ohio, tire manufacturer, will erect a one-story building, 60 x 120 ft.

The Hance Mfg. Co., Westerville, Ohio, awarded a contract to the Austin Co., Cleveland, for a foundry, 30 x 100 ft.

The Wyandotte Burial Vault Co., Upper Sandusky, Ohio, awarded a contract for a one-story building, 80 x 148 ft.

The Truscon Steel Co., Youngstown, contemplates the erection of a factory addition. G. M. Cook, is company engineer.

The Ohio Brass Co., Mansfield, Ohio, has awarded a contract for a two-story factory building, 55 x 55 ft. DeVore & Co., 908 Nicholas Building, Toledo, Ohio, are architects.

The Midwest Box Co., Circleville, Ohio, has placed a contract to build a two-story plant addition, 74 x 180 ft.

The American Clay Forming Co., Tiffin, Ohio, has placed a contract for a one-story, 70 x 140 ft. pottery factory.

The Blackstone Coal Co., Rutland, Ohio, will build a coal tipple to replace one recently burned. E. C. Morrow, Williston, Ohio, is engineer.

The Fisher Body Ohio Co. has placed a contract with the Hunkin-Conkey Construction Co. for a five-story addition to the building at its Cleveland plant, adding 200,000 sq. ft. floor area.

The Goodyear Tire & Rubber Co., Akron, Ohio, placed a contract with the Hunkin-Conkey Construction Co.,

The Crane Market

BUYING is unevenly distributed. A few builders find activity pointing up, with several orders taken, and the prospect of larger buying soon. Few indeed see much business for quick placement. To what extent inquiry goes out restricted to three or four makers, cannot be gaged, but one finds the belief that this is growing. Pending railroad inquiries do not seem active. Transactions for the week include five 10-ton Northwest gas operated cranes bought by Rodgers & Hagerty, Inc., New York, which was awarded a $4,500,000 subway contract. A Mid-Western builder sold two 5-ton cranes (a 31 and a 55-ft. span) and a 25-ton 23-ft. span.; another is about to close on six 5-ton cranes. A Long Island City contractor has inquired for three crawling tractor cranes.

Recent purchases include:

Rodgers & Hagerty, Inc., New York, five 10-ton gas operated cranes from the Northwest Engineering Co.

Lenoir Car Works, Lenoir City, Tenn., two 10-ton 43-ft. span electric traveling cranes from the Niles-Bement-Pond Co.

Manhattan Sand Co., New York, two engine roller cranes from the Industrial Works.

Indiana Service Corporation, a 25-ton 37-ft. span electric traveling crane from the Niles-Bement-Pond Co.

Standard Oil Co., New York, four 3-ton jib cranes from Maris Brothers.

Atlantic Coast Line, A 5-ton 66-ft. span crane from the Niles-Bement-Pond Co.

Buretamo Contract Co., Brooklyn, N. Y., a 35-ton locomotive crane from the McMyler-Interstate Co.

Atlantic Coast Line, a 7½-ton 40-ft. span crane from the Whiting Corporation.

Wisconsin Steel Co., Chicago, one 60-ton, two 20-ton and two 15-ton electric traveling cranes awarded to unnamed builder.

Chesapeake & Ohio, 200-ton transfer table for Peru, Ind., to the Whiting Corporation.

City of Chicago, one 7½-ton and one 20-ton three-motor traveling crane to Page & Ludwick, Chicago, representing Milwaukee Electric Crane & Mfg. Co., low bidder.

Townsend Co., New Brighton, Pa., two 5-ton, 60-ft. span cranes for pickling, annealing and storage building from Morgan Engineering Co.

Active inquiries pending include:

Long Island City, N. Y., three crawling tractor cranes.

Adirondack Steel Foundry Corporation, Watervliet, N. Y., a 10-ton electric crane.

Ajax Iron Works, Corry, Pa., a modern crane and runway.

The Taylor-Colquitt Co., 714 Andrews Law Building, Spartanburg, S. C., will purchase a locomotive crane and two jib cranes.

Crane, runway and monorail system will be built in the new plant of the Rotary Disc Bit Co., Los Angeles, Cal.

The Willys-Overland Co., Toledo, Ohio, is inquiring for five electric traveling cranes of from 5 to 10-ton capacity.

The A. O. Smith Corporation, Milwaukee, is inquiring for a five-ton, a 20-ton, two 25-ton and two 50-ton electric traveling cranes.

Battey & Kipp, Inc., 123 West Madison Street, Chicago, has asked bids on cranes for the Florida East Coast, as follows: One 200-ton, two 50-ton and four 15-ton motor-driven cranes and one 15-ton hand-power crane.

Cleveland, for a five-story brick and steel warehouse, 280 x 120 ft.

The Bender Body Co., 6409 Barberton Avenue, Cleveland, builder of bus bodies, has taken bids for a one-story top addition to its plant. This will be 150 x 350 ft.

The Champion Spark Plug Co., Toledo, Ohio, contemplates the erection of a factory addition.

The Diamond Bronze Co., 5415 Brow Avenue, Cleveland, awarded a contract for a one-story 60 x 125 ft. plant.

The Brookside Brass Foundry & Mfg. Co., 2315 Seltzer Avenue, Cleveland, has placed a contract for a foundry building, 60 x 60 ft.

The Elyria Belting & Machinery Co., Lorain, Ohio, contemplates the erection of a factory building. David Hatfield is president.

Manual training equipment will be installed in the new Lincoln Junior High School, Canton, Ohio. A manual training department will also be provided in a new junior high school at New Philadelphia, Ohio.

St. Louis

ST. LOUIS, Aug 24.

PLANS have been perfected by the Multi-Cut Rotary Bit Co., 315 Wirthman Building, St. Louis, for its local plant, comprising machine shop, parts and assembling departments. Installations will include lathes, drill presses, shapers, milling machine, bench tools, etc., to be purchased in the near future.

R. H. Sanneman, Lee Building, Kansas City, Mo., architect, will begin the construction of a three-story and basement repair shop and garage, 100 x 185 ft., to cost $200,000

The Merchants Ice Co., 1017 South Pickwick Street, Springfield, Mo., is considering the erection of several small ice plants, each with capacity of about 10 tons per day. R. F. McVay is general manager.

The Sedalia Water Co., Sedalia, Mo., plans extensions in its plant to include the installation of pumping machinery and auxiliary equipment. A fund of about $530,000 is being arranged for the work.

The Kansas-Oklahoma Gas Co., Wichita, Kan., is disposing of a bond issue of $2,000,000, a portion of the proceeds to be used for pipe-line extensions, compressor stations, etc.

The Mound City Storage Co., 3019 North Ninth Street, St. Louis, plans extensions in its cold storage plant with additional equipment, to cost $25,000. H. Clymer, Wainwright Building, is architect.

The City Council, Chandler, Okla., plans to install pumping machinery in its new waterworks, estimated to cost $150,000. Bonds will be voted at an early date. The Holway Engineering Co., New Wright Building, Tulsa, Okla., is engineer.

The Standard Ice Co., 2221 Spring Street, North Little Rock, Ark., recently organized, plans the construction of a one-story ice plant with capacity of 50 tons per day.

The City Council, Concordia, Kan., plans to install pumping equipment in the municipal waterworks, estimated to cost $35,000. Charles A. Haskins, Finance Building, Kansas City, Mo., is consulting engineer.

The St. Louis Label Works, 925 North Eleventh Street, St. Louis, plans a three-story and basement addition, 80 x 180 ft., to cost $90,000, with equipment. L. Haeger, 3844 Utah Place, is architect. J. F. Broemmelsiek is president.

The Independence Waterworks Co., Independence, Mo., is disposing of a bond issue of $450,000, part of the proceeds to be used for extensions, including the installation of pumping equipment and other apparatus.

W. E. Toler, Pawnee, Okla., plans to purchase foundry equipment for installation in a proposed local plant.

George Kilgen & Son, Inc., 3825 Laclede Street, St. Louis, has acquired a building to be remodeled and equipped for an organ-manufacturing plant.

The Wabash Railway is in the market for the following tools: 27 x 14 in. foot lathe; 24-in. rip saw; 24-in. upright drill press; 42-in. drill press; 3-ft. radial drill press; 100-ton bushing press, three 18-in. lathes, air hammer, knife grinder, air drill, air riveter, pattern makers' wood turning lathe; air hoist, sensitive drill press and 32-in. shaper.

Buffalo

BUFFALO, Aug. 24, 1925.

THE Jewett Refrigerator Co., 27 Chandler Street, Buffalo, has purchased the factory of the United States Headlight Co., 2 Letchworth Street, to be remodeled and equipped to manufacture refrigerators.

The Buffington Chair Mfg. Co., 342 Madison Avenue, Owego, N. Y., has awarded a contract to the Austin Co., Euclid Avenue, Cleveland, for a one and two-story addition, 50 x 550 ft. and 60 x 175 ft., to cost $125,000.

The Trevision Mfg. Co., Jamestown, N. Y., manufacturer of tools, gages, etc., has negotiated with the council of Sherman, N. Y., to establish a plant there. The city will take over a mill, remodel and improve it, leasing it to the

company. Equipment will be installed to give employment to about 75 persons.

The Kanes Falls Electric Co., Fort Ann, N. Y., considers the construction of a one-story steam-operated electric power plant at Truthville, N. Y.

The Acheson Graphite Co., Buffalo Avenue, Niagara Falls, N. Y., manufacturer of lubricants, electrodes, etc., plans a two-story addition, 25 x 55 ft.

The Binghamton Light, Heat & Power Co., Binghamton, N. Y., is arranging to acquire the Afton-Windsor Light, Heat & Power Co., Centre Village, N. Y. and plans improvements in the local water power station, to be used for auxiliary service. Extensions in transmission lines are planned.

The Standard Oil Co. of New York, 26 Broadway, New York, plans a three-story storage and distributing plant on Brooks Avenue, Rochester, N. Y., 66 x 100 ft., to cost $75,000, with equipment.

The Kittinger Furniture Co., 1093 Elmwood Avenue, Buffalo, will proceed to erect a one and three-story addition, 77 x 303 ft. and 81 x 113 ft., to cost $50,000. R. G. Kittinger is vice-president.

The Jordan Paper Box Co., 242 South Salina Street, Syracuse, N. Y., plans extensions and improvements in its two and three-story factory, to include the installation of additional equipment. Charles L. Jordan is president.

The Standard Shade Roller Co., Ogdensburg, N. Y., has acquired property and made tentative plans for a large addition.

Pittsburgh

PITTSBURGH, Aug. 24.

MACHINE tools are selling steadily enough in this district; the trouble is that the sales run almost entirely to single items and it takes a good many such sales to provide a satisfactory total and like so many others, machine tool makers and sellers are prone to make comparisons, not with average times, but with maximum possibilities. Such a comparison is not conducive to cheerfulness. More than the usual amount of price resistance is encountered here, where the principal demands are from the iron and steel and allied industries and those industries being forced to produce and sell at a very narrow margin of profit are disposed to enforce this condition on those they buy from.

The Pittsburgh Coal Co., Oliver Building, Pittsburgh, will begin the construction of a new steel tipple at its properties at McDonald, Pa., to replace a unit recently destroyed by fire with loss of about $100,000.

The Board of Education, Uniontown, Pa., plans to install manual training equipment in its two new junior high schools, on which work is in progress. The structures will cost $600,000.

The Kramer Wagon Co., Mineral Street, Oil City, Pa., maker of wagons, automobile bodies, etc., plans a one-story addition to cost $45,000, with equipment. G. F. Dennett is company engineer.

The Schwartz Baking Co., 1816 Bedford Avenue, Pittsburgh, awarded contract to Max Parker, 403 Grove Street, for a two-story and basement repair shop and garage, to cost $50,000.

The United States Engineer, Huntington, W. Va., asks bids until Aug. 31, for a steel fuel barge, and a steel hull.

The Perfected Metal Window Co., Huntington, W. Va., awarded a contract to the Fulton Iron Works, Huntington, for two additional one-story plant units, to be equipped to manufacture steel sash.

The Duquesne Light Co., 435 Sixth Avenue, Pittsburgh, will begin construction of a one-story automatic power substation at Carrick, Pa., to cost $45,000, with equipment.

The Catholic Diocese of Pittsburgh, Craig Street and Fifth Avenue, plans to install manual training equipment in its three and four-story high school, to cost $250,000. E. J. Weber, Knights of Columbus Building, is architect.

The Beaver Valley Water Co., Seventh Avenue, Beaver Falls, Pa., is disposing of a stock issue, the proceeds to be used for extensions in plant and system, including the installation of pumping machinery and auxiliary equipment.

George W. Gerwig, secretary, Board of Public Education, Fulton Building, Pittsburgh, is taking bids until Sept. 10, for boilers, mechanical fans and motors, temperature regulating apparatus, deaerator equipment and other apparatus for the Taylor Allderdice high school.

Schnicke & Brooker, Woolworth Building, Greensburg, Pa., architects, have plans for a two-story repair shop and garage, 82 x 85 ft., at Irwin, Pa., to cost $40,000.

The West Virginia Power & Transmission Co., Cheat Haven, Pa., will carry out a 72,000-hp. hydroelectric power development. Work will proceed soon. Contract for four water turbines has been let to the William Cramp & Sons Ship & Engine Building Co., Philadelphia.

Cincinnati

CINCINNATI, Aug. 24.

SALES to the automobile industry constituted the bulk of the business booked by local builders last week. The Hudson Motor Car Co., Packard Motor Co. and Ford Motor Co. placed orders for drills with several Cincinnati manufacturers and the Buick Motor Co. bought several gap lathes in this market. Pending inquiries from Michigan automobile makers indicate that considerable machinery is yet to be bought. While railroads have not been important factors for many weeks, outstanding inquiries point to good business from this source within the next 30 to 60 days.

While sales dropped off somewhat in the latter part of August, production is going forward at a lively rate in numerous Cincinnati plants. Lathe builders are fairly busy, with few exceptions. The Niles-Bement-Pond Co. has booked two combination journal turning and axle lathes from the Santa Fe Railroad. A Rochester, N. Y., concern is the buyer of a 16-in. lathe from the John Steptoe Co. Several local builders received an inquiry from Holland for a horizontal boring and milling machine, a grinder and an open-side planer. It is reported that the Gulf Coast Line will close Aug. 25 for a shaper. Planer makers say activities have been limited by the absence of many buyers on vacations. Orders for milling machines have declined slightly, although sales have been well sustained during the summer. Boring mill manufacturers have a number of machines in the process of making. The Niles-Bement-Pond Co. has disposed of a 36-in. x 44 sidehead boring mill to the American Car & Foundry Co. This seller also booked an order from the Chicago, Rock Island & Pacific Railroad for a 3400-lb. single frame hammer. Demand is active for grinders from the automotive field. Movement of small tools in this territory has been about normal for August.

The Berwind-White Coal Co., Huntington, W. Va., is contemplating the erection of coal docks at Huntington to cost $150,000 with equipment.

The Ferro Concrete Construction Co., Cincinnati, has been awarded a contract for remodeling the plant of the J. A. Gross Motor Car Co., 3038 Reading Road, Cincinnati.

The Ohio Edison Co., Springfield, Ohio, will start construction in January of an electric power plant to cost $1,800,000 with equipment. C. I. Weaver is vice-president. Shilling & Eastman, Springfield, are architects.

The American Seeding Machine Co., Springfield, Ohio, has purchased a factory building, 70 x 90 ft., from the Thomas Mfg. Co. The building will be used as an addition to the company's forge plant.

The Ferro Concrete Construction Co., Cincinnati, has been awarded a general contract to build an isolated phase switch house for the Rochester Gas & Electric Co., Rochester, N. Y. It will be six stories high, 38 x 104 ft. and is estimated to cost $200,000.

Bids are asked by the Higgin Mfg. Co., Newport, Ky., manufacturer of hardware products, for a two-story addition, 66 x 89 ft. L. H. Wilson, 10 West Fourth Street, is architect.

The Sabin Robbins Paper Co., Middletown, Ohio, has awarded a contract to the J. R. Stevens Co., First National Bank Building, for extensions and alterations in its mill at Cincinnati, to cost $50,000.

The Fremont Metal Body Co., Fremont, Ohio, manufacturer of automobile bodies, has awarded a contract to Burton Pelton, Fremont, for a one-story addition, 60 x 200 ft.

G. W. Bolinger, Mooresburg, Tenn., is in the market for a small engine lathe, suitable for automobile repair work; also, for a band saw, wood planer, and other woodworking tools for a local shop.

The Southern Textile Machinery Co., Paducah, Ky., has awarded a contract to Gustav Lockwood, Blandville Road, for a one-story plant, 90 x 160 ft., to cost $35,000, with equipment.

The Mansfield Vitreous Enameling Co., Eclipse Street and First Avenue, Mansfield, Ohio, is said to have prelim-

inary plans for a one-story addition to cost $32,000, with equipment. E. M. Olin is president.

The Williams Mfg. Co., Watertown, Tenn., is desirous of getting into contact with manufacturers of iron hooks, straps, clips, etc., for singletrees.

A one-story power plant will be constructed at the proposed artificial silk mill of the American Bemberg Corporation, 65 Madison Avenue, New York, at Johnson City, Tenn. A machine shop will be installed. The entire project will cost $1,500,000. Lockwood, Greene & Co., 24 Federal Street, Boston, are engineers.

The Imperial Motor Car Co., 1518 Broadway, Nashville, Tenn., will erect a one-story repair shop and garage, 55 x 190 ft., to cost $50,000. J. S. Nichols, Fourth Avenue and First Street, is architect.

The Ohio Brass Co., Mansfield, Ohio, builder of electric railway equipment, has awarded a contract to the Jacob Wolfe Co., 11½ West Fourth Street, for a two-story and basement addition, 55 x 60 ft., to cost $32,000.

The Southwest Fish & Ice Co., Vermillion, Ohio, plans to rebuild its ice-manufacturing plant destroyed by fire Aug. 21 with a loss of $50,000.

The College Hill Coal Co., Jacksonville, Ohio, operating a local coal supply yard, is reported in the market for coal conveying and hoisting machinery. L. E. Holmes is manager.

South Atlantic States

BALTIMORE, Aug. 24.

CONTRACT has been let to the J. L. Robinson Construction Co., 1130 West Lafayette Avenue, Baltimore, by the International Co., maker of bakers' equipment, for a three-story plant to cost $65,000. Equipment installation will include mixers, grinders, vacuum pans, steam apparatus, etc. Kubitz & Koenig, Emerson Tower Building, are architects.

The Norfolk & Western Railway Co., N. & W. Railway Building, Roanoke, Va., asks bids until Sept. 2, for 6000 switch plates.

The Consolidated Gas, Electric Light & Power Co., Lexington Building, Baltimore, plans to rebuild the part of its machine shop destroyed by fire, Aug. 12. Work will soon begin on a new steam-operated electric generating plant on Gould Street, of 35,000 kw. capacity with turbo-generating unit, boiler, condenser and auxiliary equipment. A. L. Loizeaux is electrical engineer.

The Dixie Brick Co., Columbus, Ga., will build an addition to its plant at Dixieland, Ala., to cost $50,000, of which more than one-half will be used for machinery. J. E. Minter is general manager.

Lewter F. Hobbs, Inc., Monticello Avenue, Norfolk, Va., machinery dealer, has inquiries out for a portable air compressor, capacity about 100 cu. ft. per min., also for a wagon-loader, Greene type.

The Ware County Light & Power Co., Waycross, Ga., has taken over the plant and system of the city of Blackshear, Ga., and plans for immediate extensions and improvements, including transmission lines.

The Marwell Lumber Co., Sparta, Ga., plans to rebuild the portion of its mill and power house, destroyed by fire, Aug. 18.

The Luitwieler Cam Pump Co., Richmond, Va., will proceed with the erection of a one-story plant, 60 x 250 ft., for which a contract was let to the Truscon Steel Co., Youngstown.

H. Gerald Hartzog, Greenwood, S. C., and associates have acquired a tract of about 1000 acres of marble deposits on Poor Mountain, near Walhalla, S. C., and plan to install a quarrying plant. Hoisting, conveying and other machinery will be needed.

R. E. Wilson, Phoebus, Va., plans to erect a cooperage plant at Hampton, Va., to cost $20,000.

The Taylor-Colquitt Co., 714 Andrews Law Building, Spartanburg, S. C., plans the early purchase of boilers from 150 to 250-hp., to operate at 150 lb. working pressure; steel tanks for oil storage, totaling 600,000 gals.; one standard gage saddle tank locomotive; steel water tower and other equipment.

The Cudahy Brothers Co., Cudahy, Wis., meat packer, plans to install an ice plant in connection with a proposed branch packing plant at Columbia, S. C.

The United States Industrial Chemical Co., Curtis Bay, Baltimore, plans a two-story addition, 65 x 105 ft., to cost $48,000.

The W. B. Broach Fruit Co., Rome, Ga., considers enlargements in its cold storage plant to cost $25,000.

Norman G. Smith & Co., Spruce Pine, N. C., plan to purchase an electric generator about 125 to 150 kw. capacity, belt-driven type, speed under 1200 r.p.m., and accessory apparatus.

The Jennings Mfg. Co., Thomasville, N. C., maker of building materials, plans enlargements in its plant, with the installation of additional machinery.

The Rhyne-Houser Mfg. Co., Cherryville, N. C., plans to install a steam-operated electric power plant in connection with a proposed textile yarn mill. The entire project will cost $150,000. D. E. Rhyne is president.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, inquires for a 75 to 100-hp. steam engine, with boiler; also for two 150-hp. horizontal return tubular boilers, to operate at 125 lbs. working pressure.

The Western Electric Co., West Broad Street, Savannah, Ga., has acquired a building at 570 Indian Street, which will be remodeled and equipped for a factory branch and distributing works.

Commissioners of the District of Columbia, District Building, Washington, will receive bids until Sept. 2, for a gasoline engine-driven portable air compressor to operate a rock drill.

The general purchasing officer, Panama Canal, Washington, will receive bids until Sept. 10, for manganese steel dipper lips, files, reamers, drills, hacksaw blades, Stillson wrenches, saws, valves, etc., Panama Circular 1692. Also, until Sept. 1, for one vertical hydraulic elevator, pipe cutters, machinists' taps, twist drills, steel squares, track jacks, ship auger bits, foundry brushes, sledge hammers, clay picks, etc., Panama Circular 2390.

The Standard Soapstone Co., Arrington, Va., has begun the erection of a one-story mill and plans the early installation of equipment.

Indiana

INDIANAPOLIS, Aug. 24.

PRELIMINARY plans are under way to rebuild the plant of the Chicago Fire Brick Co., Brazil, Ind., recently razed by fire. Estimated cost is $250,000. Headquarters are at 111 West Washington Street, Chicago.

The Snodgrass Auto Sales Co., Hammond, Ind., plans a two-story repair shop and garage, 50 x 100 ft., to cost about $30,000.

The Union Tank Car Co., 21 East Fortieth Street, New York, is working on its proposed plant at Hammond, Ind., consisting of a machine shop, wheel shop, foundry, power house and other units to cost $2,000,000, with machinery.

The Fairbanks-Morse Co., Twenty-first Street and Northwestern Avenue, Indianapolis, plans to build a one-story addition.

An interest in the Indiana Lamp Corporation, Connersville, Ind., maker of automobile lamps, has been secured by Ford, Bacon & Davis, Inc., 115 Broadway, New York, engineer. A bond issue will soon be sold, part of the fund to be used for increasing capacity.

The Evansville Metal Bed Co. Evansville, Ind., plans a one-story addition and improvements in the present factory. Additional equipment will be installed.

The Indiana Service Corporation, Fort Wayne, Ind., has applied for permission to issue stock with par value of $2,790,000, part of the proceeds to be used for extensions and improvements in plant and system.

The Board of School Trustees, Burlington, Ind., plans to install manual training equipment in a two-story addition to the present high school, to cost $75,000.

The Wabash Valley Electric Co., Clinton, Ind., has applied for permission to issue bonds for $96,000 and stock for $64,000, the proceeds to be used in acquiring the Indiana Power Co., Vincennes, Ind., and for improvements.

Gulf States

BIRMINGHAM, ALA., Aug. 24.

THE Warrior Portland Cement Corporation, Provident Building, Demopolis, Ala., formed to take over and expand the Gulf States Portland Cement Co., plans extensions with the installation of considerable additional equipment, said to cost $750,000. A. C. Deer, 705 Battle Place, Chattanooga, Tenn., is president.

The Scottsboro Ice Co., Scottsboro, Ala., plans to rebuild the portion of its ice plant, recently destroyed by fire. Estimated cost is $30,000.

The General American Tank Car Corporation, Harris Trust Building, Chicago, has acquired the plant of the Lone Star Tank Co., at Fort Worth and Wichita Falls, Tex., and is said to have planned the development of a

large plant to build tank cars. Reported cost is over $250,000.

The Church Point Light, Power & Ice Co., Church Point, La., plans to construct a power plant and one-story ice plant. The work is estimated to cost $80,000. H. G. Vautrot is president.

The Equitable Equipment Co., Inc., Whitney Bank Building, New Orleans, machinery dealer, inquires for two automatic stationary engines, 18 x 18 in., with hand wheel about 7 ft. in dia.; also, for a 500-hp. motor.

The City Council, Waco, Tex., plans to install pumping machinery in connection with proposed extensions in the city waterworks, to cost over $1,000,000.

The San Antonio Supply & Machine Co., San Antonio, Tex., plans an ice plant with capacity of 3 cars per day.

The Dallas Vocational School, Dallas, Tex., plans a group of buildings and will begin work on the first unit soon.

The Peninsula Motor Co., Sarasota, Fla., will soon begin to erect a one-story repair shop and garage to cost $65,000, with equipment. Leo Elliott, Citizens' Bank Building, Tampa, Fla., is architect.

The City Council, Sliddell, La., considers the installation of pumping equipment, part of the proposed improvements in waterworks and sewage system, to cost $175,000.

The Releef Products Co., 2029 North Fifth Avenue, Birmingham, plans the removal of its plant to provide increased output. Additional equipment will be installed.

Lawrence F. Wilson, 2922 Swiss Avenue, San Antonio, Tex., will proceed with the construction of a three-story repair shop and garage, 130 x 250 ft., to cost $150,000, with equipment. C. F. Peterman, Mercantile Bank Building, is architect.

Fire, Aug. 13, destroyed the planing mill and power house of the Red River Lumber Co., Bossier City, La., with loss of $50,000. It is purposed to rebuild soon.

The Polar Ice Co., North Commercial Avenue, Anson, Tex., plans the early installation of additional equipment and will make purchases within a few weeks.

The Gulf Refining Co., Miami Beach, Fla., will construct a one-story storage and distributing plant, with pumping station, to cost $47,000.

R. E. Thompson, Jr., P. O. Box 927, Shreveport, La., plans to install a plant to manufacture wooden boxes and will soon purchase equipment.

The Mobile & Ohio Railroad Co., Mobile, Ala., plans to construct a locomotive and car repair works at Iselin, Tenn, comprising heavy and light machine shop, boiler shop, wheel shop, tank shop, and other structures, reported to cost $500,000.

Detroit

DETROIT, Aug. 24.

WORK will soon begin on a two-story addition to the Superior Steel Castings Co. plant, 50 x 85 ft., to be used as a foundry.

The United Light & Railway Co., Grand Rapids, Mich., plans to increase capital from $75,000,000 to $150,000,000 part of the fund to be used for improvements in power plants and system.

The Scoville Mfg. Co., Waterbury, Conn., manufacturer of metal products, plans additions at the plant of the Morency-Van Buren Mfg. Co., Sturgis, Mich., recently acquired, with the installation of additional equipment.

Esselstyn & Carey, Hoffman Building, Detroit, architects, will prepare plans for a three-story addition to the Gotfredson Body Corporation plant, Wayne, Mich., to be 60 x 540 ft.

The Kelsey Wheel Co., 3600 Military Avenue, Detroit, has awarded a contract to Roger F. Hill, 408 West Fort Street, for a one-story addition, 112 x 148 ft. John Kelsey is president.

The Common Council, Hamilton, Mich., plans to erect a municipal power plant.

The City Council, Carson City, Mich., plans the early purchase of electric-operated pumping machinery for the city waterworks.

The Detroit City Gas Co., 415 Clifford Street, Detroit, plans a two-story repair shop and garage to cost $65,000. Weston & Ellington, Stroh Building, are architects. John W. Batten is general manager.

The Wolverine Tube Co., 1411 Central Avenue, Detroit, manufacturer of copper and brass tubing, etc., awarded a general contract to the Jones-McNally Co., Detroit, for a one-story addition, 60 x 200 ft. C. C. Limbocker, is president.

The Calumet & Hecla Mining Co., Calumet, Mich., plans to install electric-operated hoists at several of its local mines.

The Warner Mining Co., Crystal Falls, Mich., is perfecting plans to install an underground crushing plant.

The Board of Education, Birmingham, Mich., is considering manual training equipment for its proposed two-story junior high school, estimated to cost $275,000, for which bids will soon be asked. Frederick D. Madison, First State Bank Building, Royal Oak, Mich., is engineer.

Canada

TORONTO, Aug. 24.

SALES of machine tools in the Canadian market have not suffered noticeably from the present holiday season. On the contrary dealers and builders report a good volume of orders and point out that business done this season is far ahead of that for the corresponding period last year. Most of the present demand, however, is for single tools, with occasional orders for two or three. The automotive industry is the most extensive purchaser. Municipal governments are buying machinery and tools, especially equipment for waterworks and sewage plants. Ontario tool builders and dealers are preparing exhibits for the Canadian National Exhibition opening in Toronto Aug. 28.

The Canadian Pulp & Paper Association will start work soon on a new mill at Limoilou, Que., on which approximately $15,000,000 will be spent.

A. W. Connor & Co., Toronto, Ont., engineers, will prepare plans for a waterworks plant to cost $50,000, for the village of Belle River, Ont.

The following contracts were awarded in connection with waterworks plant and system for Welland, Ont.: filtration equipment, $46,000, Francis Hankin & Co., Toronto; pumping equipment, $55,000, Turbine Equipment Co., Toronto; wash water tank, $8,975, Horton Steel Works, Bridgeburg, Ont. The W. H. Yates Construction Co., Hamilton, Ont., is the general contractor.

The British & Canadian Packing Co., will build a meat packing plant at East St. John, N. B., to cost $150,000. G. G. Murdock, 74 Carmarthen Street, is engineer.

The Dominion Forge & Stamping Co., Ford, Ont., has let a contract to Wells & Gray, 1198 Mercer Street, for the erection of a power house.

The International Paint Co., Montreal, Que., will build factory to cost $45,000. Bremner Norris, Ltd., 65 McGill College Avenue, Montreal, is general contractor. Some work will be sublet.

The Burgess Battery Co., Niagara Falls, Ont., is building a new plant there.

Bids are being received by the City of Cap-de-la-Madeleine, Que., until Sept. 8, for the installation of motors and pumps for waterworks plant. Romeo Morrissette is city clerk and engineer.

The Dominion Bridge Co., Lachine, Que., will supply structural steel for the manufacturing plant, power development and residences to be built at Chute-a-Caron, Que., at a cost of $75,000,000 for the Aluminum Co. of Canada.

Damage to the extent of $20,000 was done by fire to buildings and machinery of the S. R. Hughes Planing Co., 81 Portland Street, Toronto, Ont. The building, a three-story brick structure, will be rebuilt and additional equipment is required.

The William Gorman Co., Montreal, Que., is having plans prepared by the company engineer, to erect a paper plant at New Westminster, B. C., to cost $150,000.

The Vancouver Oil Refinery Co., North Vancouver, B. C., has started work on the first unit of oil refinery to be erected there, to cost $40,000.

The new plant of the National Canners, Ltd., False Creek, B. C., was damaged by fire with loss of $250,000. Owners will rebuild.

The construction of a 5,000,000-bu. capacity grain elevator will be started before the end of this year at Port Mann, B. C., by Valentine Quinn of Vancouver, B. C., and associates. It is also proposed to build elevators of 500,000-bu. capacity at Ogden Point and Victoria, B. C. Plans will be submitted to Sir Henry Thornton, president, Canadian National Railways.

The Harriston Stove Co., Harriston, Ont., awarded the contract to Jack Tilker, to erect a $10,000, three-story addition to its plant. Machinery and tools will be purchased.

Pacific Coast

SAN FRANCISCO, Aug. 24.

CONTRACT has been awarded by the National Lead Co., Forty-seventh Avenue and East Tenth Street, Oakland, Cal., to Barrett & Hilp, 354 Hobart Street, for a new three-story plant, to cost $25,000.

Fire, Aug. 14, destroyed part of the Morris Furniture Co. plant, Los Angeles, Cal., with loss of $100,000. It is planned to rebuild.

The Fresno Industries, Inc., Fresno, Cal., plans enlargements in its cold storage plant to double capacity. George H. Ball is general manager.

The Siegmund Gold Mining Co., P. O. Box 275, Tacoma, Wash., has applied for permission to use waters from Little Ohop Creek, for a hydroelectric power plant to supply power to its mines.

The Board of Education, Los Angeles, plans a one-story manual training building at the school at Brooklyn and Ocean View Avenues, reported to cost about $80,000. William A. Sheldon is secretary.

The Modern Refrigerator Works, 416 East Ninth Street, Los Angeles, plans a one-story plant addition at Glendale, Cal., to be equipped for woodworking.

The City Council, Ellensburg, Wash., plans extensions in the municipal electric power plant to include the installation of additional generating and other machinery. Baar & Cunningham, Spalding Building, Portland, are engineers.

The Vermont Marble Co., Tacoma, Wash., awarded a contract to Cornell Brothers, 1113½ A Street, for a one-story mill to cost $25,000.

The American Steel Pipe & Tank Co., Alhambra, Cal., awarded a contract to the Union Iron Works, Los Angeles, for a one-story plant.

The Board of Education, San Bernardino, Cal., plans a new manual training building at Sturges High School, for which bids will soon be asked. DeWitt Mitcham, 456 E Street, is architect.

The William E. Bush Co., Los Angeles, representative for the Pierce Arrow automobile, plans a two-story repair shop and garage, 100 x 253 ft., with foundations designed for two additional stores, to cost $100,000. Edward C. and Ellis W. Taylor, 810 West Sixth Street, are engineers.

The Pasadena Ice Co., 975 South Broadway, Pasadena, Cal., plans a cold storage plant to cost $65,000.

The Rotary Disc Bit Co., 1900 East Fifty-fifth Street, Los Angeles, will spend about $25,000 to erect a plant and for machinery.

The Southern California Iron & Steel Co., Los Angeles, will build extensions to the mill and bolt shop.

The Peerless Pump Co. has awarded contract to the Union Iron Works to erect a 60 x 80-ft. steel addition which will house about $20,000 worth of new machinery.

The Sun Realty Co., 1001 Lincoln Building, Los Angeles, will erect a 12-story building there to cost $2,500,000.

The California Cotton Oil Co. and the San Diego Oil Products Co. will spend $50,000 to erect a cotton oil mill at Corcoran, Cal. C. H. Bencini, La Jolla, Cal., is president of both companies.

The Califelt Insulation Mfg. Co., 1615 McKee Street, Los Angeles, plans to erect a larger plant to replace one destroyed by fire.

The California Sports Wear Mills has awarded contract to George F. Barber, 352 South Virgil Avenue, Los Angeles, to erect a two-story factory.

Preliminary plans for a 12-story office building in Los Angeles, to cost $900,000, have been completed by Frank Webster, 922 Hollywood Guaranty Building, Hollywood, Cal.

The Crystal Chemical Co., Anaheim, Cal., will spend $70,000 for a new plant.

The Southern California Edison Co., Los Angeles, has arranged an expansion program for the development of 180,000-hp. additional capacity, consisting primarily of new hydroelectric generating stations in Kern and other counties and steel tower transmission lines, estimated to cost $40,000,000.

Foreign

MERGER plans under way by the Havana Electric Light & Street Railway Co., Havana, Cuba, and the American & Foreign Power Co., operating nine power utilities on the island, include extensions and improvements in power plants and additions in transmission system. Frank Steinhart will head the consolidation.

The American Chamber of Commerce in France, 32 Rue Taitbout, Paris, France, has received an inquiry (C-3141) from a company in Paris, in the market for American-manufactured aluminum ingots and sheets.

The City Council, Vellore, Madras Presidency, India, plans the construction of a municipal electric light and power plant to provide for about 225,000 persons, estimated to cost approximately $160,000. The American Consulate, E. S. Parker, vice-consul, has information on the project.

The secretary of the Public Works Department, Wellington, New Zealand, will take bids until Oct. 13, on equipment for the Waikato Power Scheme, including steel suspension clamps, strain clamps, strain insulator strings, with all iron-work for attachment to cross-arms, semi-tension clamps, etc.

Industrial News Notes

The Van Huffel Tube Corporation, maker of steel tubing, 574 Niles Avenue, Warren, Ohio, is erecting a frame building, 53 x 120 ft., as an addition to its plant.

James DeFriend, of the automobile sales and service interest, Watertown, N. Y., under the name DeFriend Motors, has acquired property on which it plans to erect a garage and service station, 38 x 250 ft. A cylinder reboring machine, air compresser, lathe and other equipment will be required.

The Precision Engineering Co., Steele Street and Harding Avenue, Jamestown, N. Y., maker of metal specialties and couplers, has acquired two acres of land and two buildings at Sherman, N. Y., and will move plant and equipment to that place shortly. Considerable new equipment will be required. Ralph L. Buck is president.

The Morrison Veneer Co., 36 Steele Street, Jamestown, N. Y., plans to erect a branch factory at Saranac Lake, N. Y., for which machinery and equipment will be required. Fred Morrison heads the company.

The Jewett Refrigerator Co., 27 Chandler St., Buffalo, N. Y., has acquired the local plant of the United States Headlight Corporation, and will equip it for the manufacture of refrigerators.

Owing to the failure of Canadian railroad companies to buy equipment in any considerable degree, the business of the Algoma Steel Corporation, which usually draws the bulk of its business from Canadian railroad lines, was operated on a heavily reduced scale throughout the year, except for a few months in the spring when a fair volume of orders was placed. The statement of the Algoma corporation shows net loss from operations of $323. After interest charges for the year and before depreciation, the year's loss stands at $1,069,549, to which is added the balance at debit of profit and loss, of $783,153, bringing the total debit balance to $1,852,703.

Stockholders of the Marlin-Rockwell Corporation, Jamestown, N. Y., manufacturer of bearings, have voted to increase capital stock from 222,805 to 300,000 shares.

The Torrington Co., Torrington, Conn., manufacturer of needles, swaging machinery, etc., has acquired the needle manufacturing plants at Manchester, N. H., operated by Chauncey A. Williams, employing about 600 persons. The plants will be continued as branch works.

Property and machinery of the Gardner Gear & Wheel Co., 39 Baker Street, Gardner, Mass., was acquired at public sale by the local First National Bank, holder of a mortgage loan. It is purposed to arrange for resale in the near future.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

THE following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general headings of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in. base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.30c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.65c.
Toe-calk, ½ x ⅜ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds and hex	4.00c.
Squares and flats	4.50c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	3.70c. to 3.95c.	.....
Nos. 22 and 24	3.75c. to 4.20c.	4.35c.
No. 26	3.80c. to 4.25c.	4.40c.
No. 28*	3.90c. to 4.35c.	4.50c.
No. 30	4.10c. to 4.55c.	.....

Galvanized

	Per Lb.
No. 14	4.00c. to 4.45c.
No. 16	4.15c. to 4.60c
Nos. 18 and 20	4.30c. to 4.75c.
Nos. 22 and 24	4.45c. to 4.90c.
No. 26	4.50c. to 5.05c.
No. 28*	4.90c. to 5.35c.
No. 30	5.40c. to 5.85c.

*No. 28 lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt	46	29	½ in. Butt	4	+19
¾ in. Butt	51	37	¾ in. Butt	11	+ 9
1-3 in. Butt	53	39	1-1½ in. Butt.	14	+ 6
2½-6 in. Lap	48	35	2-in. Lap	5	+14
7 & 8 in. Lap	44	17	3-6 in. Lap	11	+ 6
11 & 12 in. Lap.	37	12	7-12 in. Lap.	3	+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list
Wood screws, flat head iron,
72½, 25, 10 and 5 per cent off list

Steel Wire

BASE, PRICE† ON No. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c.
Annealed, soft	4.50c.
Galvanized, annealed	5.15c.
Coppered, basic	5.15c.
Tinned, soft Bessemer	6.15c.

†Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	19⅛c. to 20⅛c.
High brass wire	19⅝c. to 20⅝c.
Brass rods	16⅞c. to 17⅞c.
Brass tube, brazed	27⅛c. to 28⅛c.
Brass tube, seamless	23¾c. to 24¾c.
Copper tube, seamless	24¾c. to 25¾c.

Copper Sheets

Sheet copper, hot rolled, 22¼c. to 23¼c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14x20	
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20		Prime Seconds
		80 lb.	$6.15 $5.90
		90 lb.	6.30 6.05
		100 lb.	6.45 6.20
IC. $11.25	$8.85	IC.	6.65 6.40
IX. 12.85	10.85	IX.	7.85 7.60
IXX. 14.40	12.55	IXX.	9.00 8.75
IXXX. 15.75	13.85	IXXX.	10.35 10.10
IXXXX. 17.00	15.05	IXXXX.	11.35 11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire-door stock	9.00 to 10.00

Tin

Straits, pig	60c.
Bar	65c. to 67c.

Copper

Lake ingot	16¾c.
Electrolytic	16½c.
Casting	16 c.

Spelter and Sheet Zinc

Western spelter	9¼c.
Sheet zinc, No. 9 base, casks	12½c., open 13c.

Lead and Solder*

American pig lead	10c. to 12½c.
Bar lead	12c. to 13c.
Solder, ½ and ½ guaranteed	40c.
No. 1 solder	37c.
Refined solder	30½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	20c. to 21c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	38c.

Old Metals

Business is active and values are firm. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	12.50
Copper, heavy wire	12.00
Copper, light bottoms	9.75
Brass, heavy	7.50
Brass, light	6.25
Heavy machine composition	9.25
No. 1 yellow brass turnings	8.75
No. 1 red brass or composition turnings	8.50
Lead, heavy	8.25
Lead, tea	6.75
Zinc	4.50
Cast aluminum	17.50
Sheet aluminum	17.50